

1 **Abstract**

2 The purpose of this study was to explore volunteer rugby union coaches' perceptions of
3 organized competitive participation during childhood. Participants were 202 under-9 (U9)
4 mini rugby union coaches who had coached during the 2010/11 season. Coaches completed
5 an internet-based survey, and cluster analysis was used to identify different groups based on
6 attitudes towards the Rugby Football Union's (RFU) current rules and proposed changes to
7 these rules. Three distinct groups were identified based on whether they wanted to maintain
8 the status quo (Traditionalists); maintain some elements of structure (Moderates); or have a
9 much less structured introduction to rugby (Radicals). In total, over three quarters of coaches
10 favoured structured elements (early specialisation), while less than a quarter favouring a less
11 structured game (late specialisation). Only the Radical's views matched those espoused by
12 elite coaches (Thomas & Wilson, 2014) and U9 players themselves (Thomas & Wilson,
13 2015), raising several issues regarding coach education for player development during
14 childhood. In the short term there are the difficulties of aligning disparate views of U9 player
15 development via coaching for and during competitive games. This is further complicated by
16 the challenges of enhancing the skills of thousands of volunteer coaches with limited
17 experience, knowledge and expertise in coaching during childhood.

18 Keywords: coaching, rugby union, competitive participation, early specialisation, late
19 specialisation, player development.

20

Introduction

1
2 The rules and structure of organized competitive sports games during childhood (7 – 11 years
3 old) are currently a key player development issue for national governing bodies in England
4 (e.g., the Football Association, FA, 2012; the Rugby Football League Union; RFLU, 2013;
5 and the Rugby Football Union, RFU, 2011). These deliberations have coincided with calls
6 from researchers for national governing bodies to design activities that are more closely
7 aligned with the informal games children play (Ford & Williams, 2013; Renshaw, 2010).
8 Although organized competitive activities are one of the key childhood developmental
9 activities in sport (e.g., Ford et al., 2012) empirical research examining the influence of
10 competitive rules on player development has been sparse. There is an even greater void in
11 research activity exploring the perceptions of the many volunteer coaches who preside over
12 the training and game-day management of children (Coakley & Pike, 2009; Côté, Erickson,
13 & Abernethy, 2013). The current study seeks to initiate enquiry into this knowledge gap by
14 exploring the perceptions' of volunteer under-9 (U9) rugby union coaches in England of the
15 competitive rules governing the U9 game.

16 Recent research has explored elite coaches' views on (youth) mini-rugby (Thomas &
17 Wilson, 2014), and the behaviours and opinions of U9 players themselves (Thomas &
18 Wilson, 2015). The elite coaches emphasised the need for a pathway of age-appropriate
19 competitive games, where specialised skills were built sequentially on top of the foundations
20 of core basic evasion, handling and tackling skills; a late, as opposed to early specialisation
21 pathway (e.g., Côté, Baker & Abernethy, 2007). The elite coaches reflected that reducing the
22 complex structure inherent in adult rugby (e.g., set-pieces and breakdown skills) would
23 promote within-game sampling; allowing children to play in a variety of positions and
24 providing more opportunities to develop core skills (Thomas & Wilson, 2014). In effect, the
25 elite coaches felt that competitive mini-rugby was too structured and while competition was

1 important, it needed to match the developmental needs of the players rather than mirror the
2 adult game (see Côté, Erickson & Abernethy, 2013; Ford & Williams, 2013 for further
3 discussions on these issues).

4 These principles helped support the development of new rules governing competitive
5 games at U9, which were piloted as part of the RFU Shaping the Game project (RFU, 2011),
6 throughout the entire 2010/11 season by three of the twenty-eight English counties. The
7 introduction of contact skills was identified as a critical stage for player development
8 (Thomas & Wilson, 2014), and the main focus of the new rules was on how these skills were
9 introduced. The traditional rules introduced tackling alongside the set pieces (scrummaging
10 and lineouts), and the breakdown (contact) skills of rucking and mauling. In contrast the new
11 pilot rules introduced only tackling, with fewer playing numbers compared to the traditional
12 rules (7 a-side compared to 9 a-side). As there was no competition for the ball in a tackle that
13 does not go to ground, a 3-seconds 'grab/standing tackle' was officiated by the referee.

14 An objective analysis of game play between counties playing pilot as opposed to
15 traditional rules revealed that there were more opportunities for developing attacking skills
16 when playing the pilot rules (Thomas & Wilson, 2015). When compared to the traditional
17 game, the pilot game produced 55% more occasions when children ran with the ball; more
18 than twice as many successful passes; resulting in almost twice as many tries being scored,
19 over a standardised ten-minute period. A key reason for this increased opportunity for skill
20 development was the significantly higher percentage of ball in play time. Over half the time
21 available (6.45 minutes) in a traditional game on average was spent in preparing for the
22 specialised skills of scrums, lineouts and competing for possession in rucks and mauls. For
23 example, from the moment set pieces were awarded teams on average spent 92s preparing for
24 a lineout and 115s organising the forwards to participate in a scrum. Consequently in
25 comparison with the pilot rules, less time was provided to further develop the basic skills.

1 Additionally, survey data revealed that all players (irrespective of which rules they played)
2 perceived that the four most important behaviours in rugby were; passing, running, tries and
3 tackling, while lineouts, scrums, mauls and rucking were deemed the least important
4 (Thomas & Wilson, 2015). The findings suggest that U9 players value experiences in
5 organized games that are typically associated with deliberate play principles (Côté, et al.,
6 2007) and backyard (informal) games (Coakley & Pike, 2009).

7 It is notable that the elite coaches' views about where the emphasis in competitive
8 rules should be (Thomas & Wilson, 2014) were closely aligned with the views of the children
9 playing the game (Thomas & Wilson, 2015). However, given that the coaches who are
10 responsible for nurturing the players in the 700 mini-rugby teams in England are not elite,
11 but, rather are volunteers, it is important to understand their views of the rules guiding the
12 game they coach and officiate. Three main aims therefore guided the current study. The first
13 was to explore whether there were distinct groups of U9 coaches differentiated on the basis of
14 their perceptions of competitive U9 games on principles related to early (i.e. traditional rules)
15 or late (i.e. pilot rules) specialisation. The second was to examine reactions to the
16 introduction of the new pilot rules across a cross-section of mini rugby coaches. The third
17 was to examine whether U9 coaches believed that the rules of organized games needed to be
18 changed at U9 level. As the study was exploratory it was difficult to make specific
19 predictions. However, it was expected that the majority of coaches would favour less
20 structured games focusing on the development of core skills given the findings from the study
21 with elite coaches (Thomas & Wilson, 2014) and players (Thomas & Wilson, 2015).

22

Methods

1 **Participants**

2 Participants were 202, U9 coaches in England who had coached U9 mini rugby union during
3 the 2010/11 season. The majority of participants ($n = 195$) were male and only 7 female
4 coaches (3.5%) participated in the survey. The highest frequencies of coaches (57%) within
5 the combined gender groups were in the 35 – 44 age group followed by over a third (38.1%)
6 in the 45 – 54 age group. The database from the RFU RugbyFirst website, an internet-based
7 tool to help administer rugby at all levels, provided e-mail details for a sampling frame of 856
8 U9 coaches from all 28 county constituent bodies, who were contacted (sampled) and invited
9 to take part in the survey. There were 202 usable responses from U9 coaches, giving an
10 effective response rate of 23.6%. The figures included in the overall sampling frame and
11 response rate should be treated with caution. A sample set bias may exist due to difficulties
12 with maintenance within clubs and accessibility to the website.

13 **Instruments**

14 Participants completed an internet-based survey containing five sections of 31 closed
15 questions that took around 10 minutes to complete. Section A explored the behaviours U9
16 coaches identified as being important for player development and essential for U9 rugby
17 matches. Questions included 4-point scales with participants rating features such as scrums
18 and lineouts (1 = *Very Important*, 4 = *Negligible*) and statements on common behaviours
19 associated with pilot and traditional matches (1 = *Disagree Strongly*, 4 = *Agree Strongly*). A
20 four-point scale was used to ensure that the respondents made a definite choice on these
21 subjects and did not ‘hedge’ by choosing the middle option (Garland, 1991).

22 Section B focused on the coaches who had only experience of coaching the traditional
23 rules; while Section C focused specifically on coaches who had only coached the pilot rules.
24 Dichotomous questions were used to discover if coaches believed that the traditional game

1 should be changed and whether pilot coaches felt that the new rules should be played in all
2 matches in England. Section (D) focused on the beliefs of coaches who had coached both the
3 pilot and traditional game with the aim of identifying if coaches had a preference for either
4 game. Participants compared the on-field behaviours of both games by responding to
5 statements with a four-point rating scales (1 = *Disagree Strongly*, 4 = *Agree Strongly*). The
6 final Section (E) focused on demographics in order to provide background information on
7 coaches with regards to age, gender and coaching experience.

8 **Procedures**

9 Ethical approval for the study was granted by the University Ethics Committee. Following
10 background reading and discussions with RFU coaches and mini rugby coaches at U9 rugby
11 festivals (2009-10 season), several survey drafts were written and modified. Pilot versions of
12 the survey and individual questions were developed following discussions with a sample of 8
13 RFU coaches and adult rugby players who had experience of coaching mini rugby.

14 The web based survey tool SurveyMonkey (SurveyMonkey Inc., Palo Alto,
15 California, USA) was used to administer the survey during June and July 2011 and the full
16 survey period from start to finish was a total of five weeks. Coaches received e-mails inviting
17 them to participate, explaining the background to the research and the purpose of conducting
18 the questionnaire. All coaches volunteered to take part in the survey by clicking on a link in
19 the e-mail and their anonymity was preserved. As the survey was a self-administered internet
20 based questionnaire, the participants were free to withdraw at any time and to refuse to
21 answer any questions.

22 **Data Analysis**

23 **Cluster analysis.** Cluster analysis was identified as a suitable exploratory method of
24 analysis for identifying different groups of U9 coaches based on their beliefs and attitudes

1 towards the proposed new and traditional rules. The main aim of cluster analysis is to group
2 objects (i.e. coaches) based on individual characteristics, which are determined according to
3 natural relationships within the data (Hair, Anderson, Tatham & Black, 2010). There were
4 two stages in the cluster analysis process. The first stage was to identify the clusters by
5 determining which variables to include and the number of clusters to consider. Second, the
6 final cluster solution was examined for differences.

7 Clustering variables were selected based on the research objectives and in relation to
8 theoretical, conceptual and practical considerations (Hair et al., 2010). Seven input variables
9 from two 4-point scale questions were chosen for subsequent analyses. To reduce the impact
10 of multicollinearity between the clustering variables these seven variables were assessed and
11 were found to be suitable (correlation coefficients < 0.90). Hierarchical cluster analysis was
12 applied to the selected variables using Ward's agglomerative method with squared Euclidean
13 distance (Hair et al., 2010).

14 As there is no standard, objective selection for determining the final number of
15 clusters to be formed, the decision on the appropriate number of clusters, also known as the
16 'stopping rule' was based on à priori criteria, practical judgement, common sense and
17 theoretical foundations (Hair et al., 2010; Mooi & Sarstedt, 2011). This combination mutually
18 reinforces the selection of the final number of clusters. Following examination of the average
19 within cluster distance and dendrogram, careful consideration of the descriptive statistics, and
20 evaluation of the values and frequencies in each cluster it was decided that the three cluster
21 solution provided distinctive segments that warranted further examination (Hair et al., 2010).
22 Cluster 1 (C1) contained 89 coaches, cluster 2 (C2) contained 46 coaches and cluster 3 (C3)
23 contained 67 coaches.

1 4% of coaches indicated that they would remain coaching at U9 level the following season
2 with the majority (96%) moving up with their current team to the under-10 age group.

3 *****Table 1 near here*****

4 **Key Components of U9 Rugby Games**

5 Significant differences between clusters were found when identifying key components of U9
6 rugby games (see Tables 2 and 3). The Traditionalists favoured a structure based on the adult
7 game with strong support for the inclusion of the specialised set piece and breakdown skills
8 (e.g. lineouts 91%; rucking 98.5%). The Moderates agreed with the Traditionalists that games
9 should include rucks (89.9%) and mauls (91%), however, over two-thirds (67.4%) believed
10 that games should not include scrummaging and lineouts (57.3%). In contrast the Radicals
11 favoured an unstructured game that did not include any set piece and breakdown skills. The
12 Traditionalists were the only cluster who agreed that playing positions were necessary and
13 that the coach should be on the field to assist the players during matches (see Table 2).

14 *****Table 2 near here*****

15 All clusters agreed that small-sided games, developing key basic skills and positive
16 experiences were crucial for U9 rugby. Overall, coaches were supportive of fewer players in
17 teams, with the most popular answers being: 7 a side (36.1%), 9 a side (34.7%) and 10 a side
18 (26.2%). Over 90% also indicated that passing, successful tackling and having lots of touches
19 of the ball were important components of the game. Coaches in all clusters also agreed that
20 too many stoppages spoil the game. There was also unanimous agreement on the importance
21 of children enjoying themselves (100%); while playing with friends (30.2%) was seen as the
22 most important reason that children played rugby (see Table 3).

23 *****Table 3 near here*****

Discussion

1
2 The aim of the current study was to extend previous research on competitive rules in
3 organised childhood sport (in this case rugby union) by focusing on volunteer coaches'
4 perceptions of how the mini rugby game should be structured at U9 level. The findings
5 identified three distinct groups of U9 coaches, differentiated on their perceptions of
6 competitive games. These differences were based on principles related to early or late
7 specialisation (Côté et al., 2007) and the level of support for the RFU's pilot rules of play. A
8 fifth of the coaches embraced the pilot rules and late specialisation (Radicals); just over a
9 third steadfast opponents supported early specialisation and the current laws (Traditionalists);
10 and over 40% seemed to favour a hybrid version of both U9 games (Moderates).

11 Notably, these results suggest that over three quarters of coaches (Traditionalist and
12 Moderates clusters) differed in their views on key components of U9 games when compared
13 to elite coaches (Thomas & Wilson, 2014) and U9 players (Thomas & Wilson, 2015).
14 Essentially these differences revolved around the role of early specialisation and the
15 importance of adopting a similar structure to adult rugby union; including complex set pieces
16 (scrummaging and lineouts) and breakdown skills (rucking and mauling) at U9. Support for
17 this type of game was strongest among the Traditionalists, who favoured the early
18 introduction of all of the complex skills and allowing players the opportunity to play in
19 specialised positions (cf. Coakley & Pike, 2009). Moderates agreed that complex breakdown
20 skills should be part of competitive matches; however, they supported a game without set
21 pieces and playing positions.

22 These views appear to support an early skill specialisation pathway to development in
23 rugby union; as spending more time honing specialised skills from an early age should
24 benefit adult performance. In support of this view, researchers have reflected that sport-

1 specific practice is essential from an early age due to a lack of transferability in crucial
2 perceptual-cognitive skills important for anticipation and decision-making (Renshaw &
3 Fairweather, 2000; Wood & Abernethy, 1997). Additionally, researchers have revealed a
4 positive relationship between the amount of time spent practising skills and becoming an
5 expert in applying those skills (Helsen, Starkes & Hodges, 1998; Kalinowski, 1985). For
6 example in soccer, Ford and colleagues found that players who made it through an elite
7 academy structure to be offered a professional contract accrued more hours of practice than
8 those who were released (Ford & Williams, 2013).

9 On the other hand, less than a quarter of coaches (Radicals cluster), favoured a less
10 structured game as a means of enthusing children about playing rugby. Instead, they
11 suggested that set pieces, breakdowns and playing positions should not be included in U9
12 rugby. These views mirror those made by elite rugby union coaches (Thomas & Wilson,
13 2014) and U9 players (Thomas & Wilson, 2015); reflect key components of informal player-
14 controlled games (Coakley & Pike, 2009); and include elements of late specialisation where
15 the emphasis is placed on modified and unstructured activities (i.e. deliberate play; Côté &
16 Abernethy, 2012). This type of activity is theorised to provide youngsters with the
17 opportunity to develop fundamental motor skills, such as running, throwing and jumping, in
18 an enjoyable and motivating environment (Baker, Côté & Abernethy, 2003; Côté, Baker &
19 Abernethy, 2003).

20 The data on the participants' coaching experience and expertise provide potential
21 explanations for the game structures supported by each cluster. First, more Radicals had
22 coached the pilot game than the other clusters, and they therefore had first-hand experience of
23 seeing the impact on player behaviours, as outlined in Thomas and Wilson (2015). Second,
24 the majority of coaches in all clusters lacked higher coaching qualifications (93.1% level 1 or
25 less) and over three quarters (77.2%; Table 1) having only one season of experience of

1 coaching at U9 level (majority of these moving with their children to coaching at under-10).
2 Research has indicated that coaches lacking in formal coaching qualifications develop their
3 understanding of the profession through informal learning experiences, for example their own
4 playing experiences (Erickson, Bruner, MacDonald & Côté, 2008; Lemyre, Trudel, &
5 Durand-Bush, 2007; Wright, Trudel & Culver, 2007). Viewed from this perspective,
6 inexperienced coaches who had played at a lower level are more likely to identify with a
7 game structure, the adult full-sided game, in which they are most familiar and hence
8 confident in coaching. Findings showed that Traditionalists and Moderates all played to a
9 lower level and were more comfortable coaching a highly structured game format (i.e.
10 including rucks and mauls). In contrast, Radicals, who had played at a higher level, supported
11 a more open game where the emphasis on coaching would be on tactical elements (e.g.
12 decision making) and skill development. As the elite coaches supported this approach too
13 (Thomas & Wilson, 2014), there would appear to be a link between rugby expertise and the
14 nature of the U9 game favoured.

15 The lack of expertise and experience among the coaches may also provide an
16 explanation for the contradiction that emerges within the results of the Traditionalist and
17 Moderates clusters with regards to the need for early specialisation and the development of
18 basic skills. On the one hand, the results show that there was consensus among all clusters for
19 increasing opportunities to develop fundamental movement skills, with lots of player
20 engagement and enjoyment (Table 3); behaviours that have been linked to *late* specialisation
21 activities and the principles of deliberate play (Côté et al., 2007). All coaches suggested that
22 lots of touches, passes and successful tackles were very important elements of the game;
23 views supported by both U9 players (Thomas & Wilson, 2015) and elite coaches (Thomas &
24 Wilson, 2014). To provide these opportunities the coaches indicated that players should be

1 given optimal opportunities during games to develop these key skills; with strong agreement
2 (over 90%) among U9 coaches that too many stoppages spoil the game (Table 3).

3 U9 match analysis (Thomas & Wilson, 2015), however, revealed that the pilot rules
4 had fewer stoppages than traditional rules and therefore the ball was kept the ball in play for
5 longer. These changes provided more opportunities for skills to be performed and developed
6 (see also Berry, Abernethy & Côté, 2008; Burton, O'Connell, Gillham & Hammermeister,
7 2011; Fenoglio, 2004). These results indicate that the Moderates' and Traditionalists' support
8 for promoting skill development and involvement within an adult-structured game is difficult
9 to accomplish (Thomas & Wilson, 2015). Additionally, other (mis)perceptions about the
10 outcomes possible from both sets of the rules were evident. Both Moderates and
11 Traditionalists agreed that the players' tackling skills were better in the traditional game; that
12 there was the same amount of passing in both games; and that U9 players enjoyed the
13 traditional game more than the pilot. The findings from the objective (game analysis) and
14 subjective (player surveys) analyses of U9 games suggests otherwise; players tended to want
15 more passing, running and tackling opportunities and these were significantly increased in the
16 pilot game (Thomas & Wilson, 2015). A possible explanation for these mis(perceptions) may
17 have been due to the RFU's limited attempts to communicate the match analysis data.
18 Although roadshows were conducted in the pilot areas and a report published, further
19 communication by the RFU to the U9 coaches may have aided understanding by highlighting
20 the key findings and level of analysis that underpinned the new rules of play.

21 These findings raise several important issues regarding coach education for player
22 development during childhood for the RFU and national governing bodies in general. It has
23 been recently highlighted that the success of any youth development pathway depends on the
24 pedagogical abilities of coaches alongside the appropriateness of the structure that has been
25 implemented (Lloyd et al., 2015a). In the short term the RFU has the challenge of aligning

1 these seemingly separate views of U9 player development when it comes to educating the
2 coaches. The creation of a 'Club Coaching Coordinator', a role supported by the RFU, may
3 provide an initial solution through providing the opportunity to educate coaches on the
4 implementation of the new rules. This, for example, could involve having a coach who stays
5 coaching at the U9 level for a number of seasons and works with the coaching team to ensure
6 that the ethos of the new laws are applied. In the long term, there is the challenge of
7 enhancing the skills of thousands of coaches at mini rugby level who are volunteers with
8 limited experience, knowledge and expertise in coaching. This is a daunting task as over the
9 past decade it has been increasingly highlighted in studies that coaching is a complex process
10 (Jones, Edwards & Filho, 2014; LeBed & Bar Eli, 2013). The findings of the current study
11 suggest (albeit tentatively) that greater coaching expertise may be required during the
12 formative years if players are to be presented with a positive learning environment in
13 competitive matches and practice to develop their all-round skills (Thomas & Wilson, 2014).
14 This is especially relevant for developing key fundamental movement skills, as it has been
15 suggested that childhood presents the optimal opportunity to achieve these (Gallahue &
16 Ozmun, 2006; Thomas & Thomas, 2008). It raises the issue for national governing bodies of
17 whether greater investment is required to increase coaching expertise at this level in order to
18 support and enhance the development of all children participating in mini rugby. This type of
19 NGB support, it is suggested, would support the development of coaches with the ability to
20 apply pedagogies suitable for providing optimal learning opportunities for all participants
21 (Slade, Webb & Martin, 2015) and consequently promote lifelong engagement within sport
22 and physical activity (Lloyd et al., 2015b).

23 The current study is not without limitations. First, as the survey was distributed to
24 coaches with e-mail addresses on the RugbyFirst website, there could be a sample set bias.
25 Those without online access and those not registered on the website would have not been able

1 to participate. Second, the extent to which the findings generated from this sample of U9
2 coaches generalize to the wider coaching population is unknown. Third, the data-driven
3 nature of cluster analysis means that clusters will always be created whether or not a genuine
4 group structure exists. Finally, these findings could also be considered as a ‘moment in time’.
5 With the pilot rules becoming mandatory at U9 for the 2011/12 season in subsequent years’
6 coaches would only have experienced coaching the game with the new laws and the concerns
7 from the traditionalists may not have materialised. Future research could extend the current
8 research by interviewing members of the clusters individually or in groups to gain a more in-
9 depth perspective of how they believe the U9 mini rugby game should be structured. As there
10 is limited research on volunteer coaches in general, other areas of interest could include
11 studying grassroots coaches’ perceptions of coach education and the informal and formal
12 structures that are available to support their coaching.

13 **Conclusion**

14 The results presented in this study are one of the first to explore volunteer coaches’
15 perceptions of competitive sport participation during childhood. The research suggests that
16 many U9 coaches at mini rugby level have conflicting views on the structure of competitive
17 games during childhood when compared with the players themselves and elite coaches. The
18 findings showed that over three quarters of U9 coaches surveyed (i.e. the Traditionalists and
19 Moderates) favoured structured elements (early specialisation); while less than a quarter (the
20 Radicals), favoured a less structured game (late specialisation). However, the findings also
21 revealed a potential mismatch between many coaches’ overarching views of what was
22 important to promote and emphasise in youth rugby (lots of ball-in-play), and their views of
23 what should be included within the rules (lots of structured elements). These contrasting
24 opinions highlight the challenges facing the RFU when developing mini rugby players within
25 the current coaching structure. In the short term there are the difficulties of aligning disparate

1 views of U9 player development via coaching for and during competitive games. This
 2 appears to be complicated further by the difficulty of enhancing the skills of thousands of
 3 coaches who are volunteers with limited experience and expertise in coaching at mini rugby
 4 level.

5 **References**

- 6 Baker, J., Côté, J., & Abernethy, B. (2003). Sport-specific practice and the development of
 7 expert decision-making in team ball sports. *Journal of Applied Sport Psychology*,
 8 15(1), 12 - 25. doi: 10.1080/10413200305400
- 9 Berry, J., Abernethy, B., & Côté, J. (2008). The contribution of structured activity and
 10 deliberate play to the development of expert perceptual and decision-making skill.
 11 *Journal of sport and exercise psychology*, 30(6), 685–708.
- 12 Burton, D., O’Connell, K., Gillham, A. D., & Hammermeister, J. (2011). More cheers and
 13 fewer tears: Examining the impact of competitive engineering on scoring and attrition
 14 in youth flag football. *International Journal of Sports Science & Coaching*, 6(2), 219-
 15 228.
- 16 Coakley, J., & Pike, E. (2009). *Sports in society: issues and controversies*. London: McGraw-
 17 Hill.
- 18 Côté, J., & Abernethy, B. (2012). A developmental approach to sport expertise. In S. Murphy
 19 (Ed.), *The Oxford Handbook of Sport and Performance Psychology* (pp. 435-447).
 20 New York, NY: Oxford University Press.
- 21 Côté, J., Baker, J., & Abernethy, B. (2003). From play to practice: A developmental
 22 framework for the acquisition of expertise in team sports’. In J. L. Starkes & K. A.
 23 Ericsson (Eds.), *Expert Performance in Sport: Advances in Research on Sport*
 24 *Expertise* (pp. 89-113). Champaign, IL: Human Kinetics. .

- 1 Côté, J., Baker, J., & Abernethy, B. (2007). Practice and play in the development of sport
2 expertise. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology*
3 (3rd ed., pp. 184-202). Hoboken, NJ: Wiley.
- 4 Côté, J., Erickson, K., & Abernethy, B. (2013). Play and practice during childhood. In J. Côté
5 & R. Lindor (Eds.), *Conditions of children's talent development in sport*. West
6 Virginia University, WV: Fitness Information Technology
- 7 Erickson, E., Bruner, M. W., MacDonald, D. J., & Côté, J. (2008). Gaining Insight into
8 Actual and Preferred Sources of Coaching Knowledge. *International Journal of*
9 *Sports Science & Coaching* 3(4), 527-538.
- 10 Fenoglio, R. (2004) The Manchester United Pilot Scheme for U9s. *Insight*. Football
11 Association. p. 30-31.
- 12 Football Association. (2012). Football Association's youth development review. Retrieved
13 from [http://www.thefa.com/my-football/player/youth-football/youth-development-](http://www.thefa.com/my-football/player/youth-football/youth-development-review)
14 *review*.
- 15 Ford, P., & Williams, A. M. (2013). The acquisition of skill and expertise: the role of practice
16 and other activities. In A. M. Williams (Ed.), *Science and soccer: developing elite*
17 *performers*. Abingdon: Routledge.
- 18 Ford, P. R., Carling, C., Garces, M., Marques, M., Miguel, C., Farrant, A., Stenling, A.,
19 Moreno, J., Le Gall, F., Holmström, S., Salmela, J. H., Williams, A. M. (2012). The
20 developmental activities of elite soccer players aged under-16 years from Brazil,
21 England, France, Ghana, Mexico, Portugal and Sweden. *Journal of Sports Sciences*,
22 30(15), 1653-1663.
- 23 Gallahue, D. L., & Ozmun, J. C. (2006). *Understanding Motor Development: Infants,*
24 *Children, Adolescents, Adults* (6th ed.). Boston, MA: McGraw-Hill.

- 1 Garland, R. (1991). The Mid-Point on a Rating Scale: Is it Desirable? *Marketing Bulletin*, 2,
2 66-70.
- 3 Hair, J., Anderson, R., Tatham, R., & Black, W. (2010). *Multivariate Data Analysis* (7 ed.).
4 New Jersey, NJ: Prentice Hall.
- 5 Helsen, W. F., Starkes, J. L., & Hodges, N. J. (1998). Team sports and the theory of
6 deliberate practice. *Journal of Sport & Exercise Psychology*, 20, 12–34.
- 7 Jones, R. L., Edwards, C., & Filho, T. V. (2014). Activity theory, complexity and sports
8 coaching: an epistemology for a discipline. *Sport, Education and Society*,
9 <http://dx.doi.org/10.1080/13573322.2014.895713>.
- 10 Kalinowski, A. G. (1985). The development of Olympic swimmers. In B. S. Bloom (Ed.),
11 *Developing talent in young people* (pp. 139-192). New York, NY: Ballantine.
- 12 LeBed, F., & Bar-Eli, M (2013). *Complexity and control in team sports: Dialectics in*
13 *contesting human systems*. Abingdon: Routledge.
- 14 Lemyre, F., Trudel, P., & Durand-Bush, N. (2007). How youth-sport coaches learn to coach.
15 *The Sport Psychologist*, 21, 191-209.
- 16 Lloyd, R.S., Oliver, J.L., Faigenbaum, A.D., Howard, R., De Ste Croix, M.B.A., Williams,
17 C.A., Best, T.M., Alvar, B.A., Micheli, L.J., Thomas, D.P., Hatfield, D.L., Cronin,
18 J.B., and Myer, G.D. (2015a) Long-term athletic development: Part 2: Barriers to
19 success and potential solutions. *Journal of Strength and Conditioning Research*, 29,
20 1451–1464.
- 21 Lloyd, R.S., Oliver, J.L., Faigenbaum, A.D., Howard, R., De Ste Croix, M.B.A., Williams,
22 C.A., Best, T.M., Alvar, B.A., Micheli, L.J., Thomas, D.P., Hatfield, D.L., Cronin,
23 J.B., and Myer, G.D. (2015b) Long-term athletic development: Part 1: A pathway for
24 all youth. *Journal of Strength and Conditioning Research*, 29, 1439–1450,

- 1 Mooi, E., & Sarstedt, M. (2011). *A Concise Guide to Market Research* Berlin: Springer-
2 Verlag.
- 3 Renshaw, I., & Fairweather, M. M. (2000). Cricket bowling deliveries and the discrimination
4 ability of professional and amateur batters. *Journal of Sport Sciences*, 18(12), 951-
5 957.
- 6 Renshaw, I. (2010). Building the foundations: Skill acquisition in children. In I. Renshaw, K.
7 Davids & G. J. Savelsbergh (Eds.), *Motor Learning in Practice: A constraints-led*
8 *approach*. Abingdon: Routledge
- 9 Rugby Football League Union (2013). Primary Rugby League pilot game research, Retrieved
10 July from
11 [http://media.rladmin.co.uk/docs/Primary%20RL%20Pilot%20Game%20Research%2](http://media.rladmin.co.uk/docs/Primary%20RL%20Pilot%20Game%20Research%20Brochure.pdf)
12 [0Brochure.pdf](http://media.rladmin.co.uk/docs/Primary%20RL%20Pilot%20Game%20Research%20Brochure.pdf)
- 13 Rugby Football Union. (2011). Kids First Rugby, Retrieved from
14 <http://www.englandrugby.com/my-rugby/coaches/new-rules-of-play>
- 15 Slade, D.G., Webb, L.A. & Martin, A.J. (2015). Providing sufficient opportunity to learn: a
16 response to Grehaigne, Caty and Godbout, *Physical Education and Sport Pedagogy*,
17 20, 67-78, DOI: 10.1080/17408989.2013.798405
- 18 Thomas, G. L., & Wilson, M. R. (2015). Playing by the rules: A developmentally appropriate
19 introduction to rugby union. *International Journal of Sports Science & Coaching*,
20 10(2+3), 413-423.
- 21 Thomas, G. L., & Wilson, M. R. (2014) Introducing children to rugby: elite coaches'
22 perspectives on positive player development, *Qualitative Research in Sport, Exercise*
23 *& Health*, 6(3), 348-365, DOI: 10.1080/2159676X.2013.819373
- 24 Thomas, K. T., & Thomas, J. R. (2008). Principles of motor development for elementary
25 school physical education. *The Elementary School Journal*, 108(3), 181-195.

1 Wood, J. M., & Abernethy, B. (1997). An assessment of the efficacy of sports vision training
2 programme. *Optometry and vision science*, 74, 646-659.

3 Wright, T., Trudel, P., & Culver, D. (2007). Learning how to coach: The different learning
4 situations reported by youth ice hockey coaches. *Physical Education and Sport
5 Pedagogy*, 12, 127-144.

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1 **Acknowledgments**

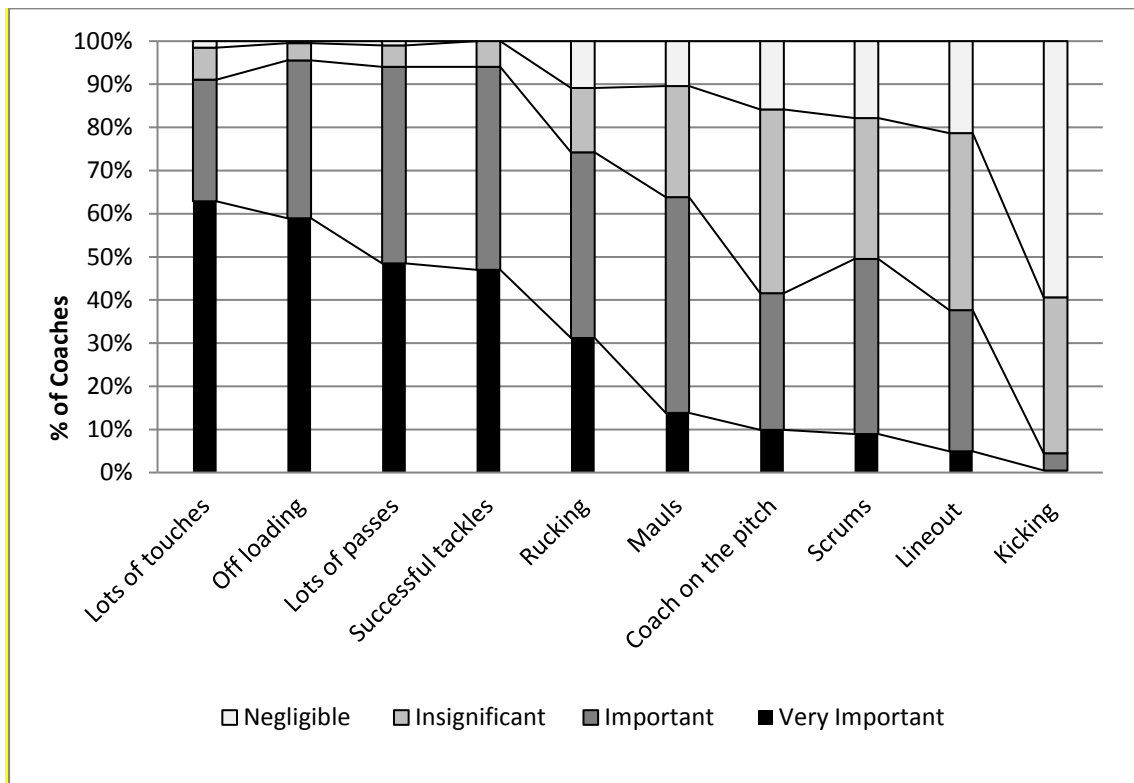
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1 **Figure 1:** Coaches ratings of the importance of key components for U9 rugby matches.



2

Table 1: Selected coach characteristics among the clusters

Cluster	Moderates		Traditionalists		χ^2
	es	Radicals	alists	All	
Cluster Size	89 cases (44%)	46 cases (22.8%)	67 cases (33.2%)	202	
					7.17
% coaches aged 25-34	3 (3.4%)	0 (0%)	1 (1.5%)	4 (2%)	5*
				116	
	54 (60.7%)	31 (67.4%)	31 (46.3%)	(57.4%)	
% coaches aged 35-44				77	
		15	30	(38.1%)	
% coaches aged 45-54	32 (36%)	(32.6%)	(44.8%))	
				5	
% coaches aged 55-64	0 (0%)	0 (0%)	5 (7.5%)	(2.5%)	
% experience of coaching U9	64		55	136	29.1
traditional rules only	(71.9%)	17 (37%)	(82.1%)	(67.3)	8**
% experience of coaching U9		13		24	
Pilot rules only	7 (7.9%)	(28.3%)	4 (6%)	(11.9)	
% experience of coaching both	18	16		42	
U9 rules	(20.2%)	(34.8%)	8 (11.9%)	(20.8)	
% Mini rugby highest playing					13.4
level	6 (6.7%)	0 (0%)	2 (3%)	8 (4%)	6**
% School rugby highest playing	22		11	37	
level	(24.7%)	4 (8.7%)	(16.4%)	(18.3%)	

)
% Youth rugby highest playing level	6 (6.7%)	4 (8.7%)	5 (7.5%)	15 (7.4%)
% Adult club rugby highest playing level	44 (49.5%)	21 (45.7%)	38 (56.7%)	103 (51%)
				24
% County rugby highest playing level	5 (5.6%)	12 (26.1%)	7 (10.4%)	(11.9%)
% Divisional rugby highest playing level	3 (3.4%)	3 (6.5%)	3 (4.5%)	9 (4.5%)
% Semi-professional rugby highest playing level	3 (3.4%)	2 (4.3%)	0 (0%)	5 (2.5%)
% Professional rugby highest playing level	0 (0%)	0 (0%)	1 (1.5%)	1 (0.5%)

Kruskall-Wallis Test, χ^2 , 2df, *-Significant at $p \leq 0.05$, **-Significant at $p \leq 0.001$

Table 2: Variations among clusters to key features of U9 matches (all coaches)

Cluster	Modera tes	Radicals	Traditio nalists	Sa mpl e	χ^2
Cluster Size	89 cases (44%)	46 cases (22.8%)	67 cases (33.2%)		
% of the following are important or very important in U9 games					
Rucking	86.5	23.9	92.5	74.3	64.10*
Coach on the pitch	26.9	32.6	67.1	41.6	24.84**
Scrum	48.3	8.7	79.1	49.5	63.75**
Lots of touches	91	97.8	86.5	91.1	9.46*
Kicking	1.1	2.2	10.5	4.5	4.67
Successful tackles	95.2	93.5	92.5	94	4.67
Lots of passes	91	97.9	95.5	94	4.9

					8
Mauls	76.4	8.7	85.1	63.	76.
				9	58*
					*
Off loading	93.2	100	95.5	95.	8.5
				5	*
Lineout	33.7	4.3	65.6	37.	62.
				7	56*
					*

4 point scale where 1 = Very Important,

4 = Negligible

Kruskall-Wallis Test, χ^2 , 2df, *-

Significant at $p \leq .05$, **-Significant at

$p \leq .001$

Table 3: Variations among clusters to key behaviours in U9 matches (all coaches)

Cluster	Moderates		Traditionalists		χ^2
	Radicals	Radicals	Radicals	Radicals	
					202
Cluster Size	89 cases (44%)	46 cases (22.8%)	67 cases (33.2%)	100 (%)	
% of coaches that agree or strongly agree					
					6.32
A coach should referee games	73	82.6	76.1	76.2	*
Children's enjoyment is important	100	100	100	100	4.24
					91.0
Lines-out aren't needed	57.3	93.5	9	49.5	1**
Too many stoppages spoil the game	84.3	89.1	71.6	81.2	*
					7.57
Lots of passing is crucial for player development	88.8	97.8	97	93.6	*
					104.
Mauling is important	83.1	4.3	94	68.8	87**
					51.5
Playing positions are needed	49.4	15.2	76.1	50.5	2**
					36.5
A grab below the arm pits should be allowed as a tackle	29.2	69.5	70.1	51.9	2**
					75.5
Children need to scrummage at	32.6	6.5	79.1	42.1	

this age					4**
					88.5
Rucking isn't needed	10.1	78.2	1.5	22.8	7**

Kruskall-Wallis Test, χ^2 , 2df, *-Significant at $p \leq .05$, **-Significant at $p \leq .001$. 4

point scale where 1 = Disagree Strongly, 4 = Agree Strongly
