

Institution: Loughborough University		
Unit of Assessment: C24 Sport and Exercise Sciences, Leisure and Tourism		
Title of case study: Shortening cricket pitches to revitalize junior cricket throughout England and Wales		
Period when the underpinning research was undertaken: 2014 - 2018		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof Mark King Prof Fred Yeadon	Professor of Sports Biomechanics Professor of Computer Simulation in Sport	1999 - present 1990 - 2016
Period when the claimed impact occurred: January 2018 – December 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact (indicative maximum 100 words)		
<p>Loughborough University's research into shortening junior cricket pitch lengths, has led to the following impacts on the game: 1) The England and Wales Cricket Board (ECB) introduced a new pitch length policy change for all forms of junior cricket from the beginning of the 2019 season. The ECB now expect all recreational, school and talent environment cricket across England and Wales, from the new "Dynamos Cricket" for 8- to 11-year-olds, up to county under-15 girls, to be played on the shorter pitches determined by the Loughborough research; 2) Coaching practice has changed in response to the more varied demands that games on shorter pitches make on players, and 3) Improved objective measures of batting, bowling and fielding, resulting in a more engaging game for players, spectators and coaches.</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>The scaling of the playing environment is an aspect of junior sport which has begun to receive attention. In cricket, the ECB (cricket's national governing body) recognized that the pitch length appeared to be too long for young players and believed that this was detrimental to player enjoyment (and therefore engagement and retention), as well as technical development. To address this, ECB National Performance Manager, Mr David Graveney OBE, and Professor King and Professor Yeadon (Loughborough University) initiated a research project, jointly funded by the ECB and Loughborough University, to establish appropriate pitch lengths for junior cricket.</p>		
Match analysis		
<p>A pilot study conducted in collaboration with a Level 4 county coach led to a pitch length of 16 yards being trialled in a series of club under-11 and county under-10 matches during 2015. Analysis of these matches established that shortening the cricket pitch from 19 yards to 16 yards had positive effects for bowlers, batters, and fielders, consequently resulting in matches that were more engaging [R1].</p>		
Bowling analysis		
<p>Anecdotal evidence from coaches suggested that young bowlers were having difficulty bowling accurate, good length deliveries on the existing pitch lengths, often releasing the ball close to and sometimes above the horizontal to get the ball to reach the batter. An optimal pitch length would enable good bowlers to bowl a good length delivery when releasing the ball at angles close to those of good adult bowlers. Studying top under-10 and under-11 pace bowlers at the ECB National Cricket Performance Centre at Loughborough University, showed that when the original junior pitch length of 19 yards was shortened by 3 yards, the top young</p>		

bowlers released the ball on average 3.4° further below horizontal [R2]. The improved release angle on the shorter pitch was closer to that of elite adult pace bowlers, enabling junior players to achieve greater success and develop more variety in their bowling. Importantly, ball release speed was unaffected by the shorter pitch length and this was also confirmed when analysing county standard under-13 and under-14 bowlers.

Batting analysis

Batters should play “front-foot” shots to full balls (bouncing close to them) and “back-foot” shots to short balls (bouncing further away), with a “good length” region in-between where batters are uncertain how to play. Our research calculated what a good length is for junior cricketers and found that club batters played more than twice as many back-foot shots to short balls on the shorter pitch compared with the original pitch length. A smaller effect was found in county matches, where there was also an increase in front-foot shots to full deliveries [R3]. The shorter pitch strengthened the coupling between the delivery length and appropriate shot selection.

Determining appropriate pitch lengths for juniors

Age-specific typical bowling speeds and ball release positions were used with the ball release angle of good adult bowlers to calculate ball flight distances. When combined with the good length distances [R3], appropriate pitch lengths for the different junior age groups were determined [R4]. Rounded to whole yards (per tradition) these became the new ECB pitch length recommendations.

3. References to the research (indicative maximum of six references)

- R1** Harwood, M.J., Yeadon, M.R., King, M.A. (2018). Reducing the pitch length: effects on junior cricket. *International Journal of Sports Science & Coaching*, 13, 1031-1039. <https://doi.org/10.1177/1747954118772482>.
- R2** Harwood, M.J., Yeadon, M.R., King, M.A. (2018). Does shortening the pitch make junior cricketers bowl better? *Journal of Sports Sciences*, 36, 1972-1978. <https://doi.org/10.1080/02640414.2018.1428884>.
- R3** Harwood, M.J., Yeadon, M.R., King, M.A. (2019). A shorter cricket pitch improves decision-making by junior batters. *Journal of Sports Sciences*, 37, 1934-1941. <https://doi.org/10.1080/02640414.2019.1606760>.
- R4** Harwood, M.J., Yeadon, M.R., King, M.A. (2021; on-line publication date August 2020). Scaling the cricket pitch to fit junior players. *Journal of Sports Sciences*, 39, 31-37. <https://doi.org/10.1080/02640414.2020.1804518>.

Evidence of quality of the research

The research was published in peer-reviewed, international scientific journals.

4. Details of the impact (indicative maximum 750 words)

This research funded by the ECB and Loughborough University has resulted in a change of policy by the ECB which has directly benefitted all young cricketers throughout England and Wales, has changed coaching practice and has been described by an experienced Level 4 county coach as:

“easily one of the best things that has happened to junior cricket in the last 25 years” [S1].

The research team’s expertise and strong working relationship with the ECB resulted in invitations to be part of the process of engaging the junior cricket community (counties, leagues, clubs, schools, coaches, etc.) with the research and benefits of shorter pitches. This included making presentations to leagues, county cricket boards and coaches, including an invited presentation at the 2017 ECB Coaches Association National Conference “Change the

Game” and an associated article “Shortcut to Success” in “Coaching Insight 7”, the annual ECB Coaches Association publication [S2, S3].

1) Change of policy to reduce pitch lengths

The Loughborough University research [R1-R4] has led directly to a change of policy by the ECB, the new pitch lengths being a fundamental part of the new Junior Format recommendations [S4] for junior leagues, schools’ cricket (via the School Games, Chance to Shine, the Independent Association of Prep Schools and the English Schools Cricket Association), and national programmes and competitions (for example ECB Dynamos Cricket, Lady Taverners tournaments, national under-13 club T-20 competitions, and county age group cricket up to under-14 boys and under-15 girls) [S5, S6]. The importance the ECB attaches to the changes is evidenced by the inclusion in their 2018-19 Annual Review of a two-page section entitled “How science made the junior formats more fun” [S7].

The policy change meant that from the commencement of the 2019 season onwards, the ECB has had the expectation that **every** child playing cricket throughout England and Wales will play on the pitch lengths determined by this research. This indicates the considerable reach of the impact.

2) Changed coaching practices

Improvements to the way the game is played as a result of the pitch length changes [R1] has had an impact on coaches who have needed to adapt their approaches in order to prepare players for the more varied and dynamic games that shorter pitches produce [S1, S3, S8]. To assist the approximately 7000 elite to grassroots level qualified coaches throughout the country, plus parents and helpers through the Associate Member scheme, the ECB Coaches Association (ECB CA) devoted an issue of their magazine “Hitting the Seam” to explain and illustrate the strategies for coaches moving players to the new pitch lengths and formats [S9]. Coaches Association publications were also circulated to these members through the dedicated member’s website “icoachcricket.ecb.co.uk”, maximizing awareness of the policy changes and how coaches should best support young players.

In particular, coaches have adapted to “*cover a broader range of technical skills from an earlier age*” [S3], thereby enhancing the opportunities for players at all levels to reap the benefits of playing on the scaled pitches. As one senior coach explained:

“it isn’t about inventing new coaching strategies - more about ‘re-finding’ some of the core skills that players should need at that level” [S1].

3) Improved outcomes for young players

The significance of the policy change has been seen in the improved outcomes for batters (more playable deliveries, a greater variety of shots, including shots off the back foot, more running between the wickets), bowlers (better ball release angle, fewer No balls) and fielders (greater involvement) in matches [R1, R3], plus the very positive subjective feedback from players, coaches, team managers and parents which speaks of a more exciting and engaging game [S1, S2, S8]. One under-11 player remarked to his coach:

“It’s like a proper match! When is the next one?” [S8].

Coaches have also noted improved technical skills demonstrated in matches on shorter pitches, one noting:

“I have witnessed and observed a vast improvement in all those who have participated during the matches” [S8].

Furthermore, parents and coaches have written expressing their 'conversion' to the new pitch lengths, despite previous misgivings [S2, S5]. One county age group coach was quoted as saying:

"I was very, very sceptical when the idea was first put forward but, having witnessed it first hand over the season, I can definitely say it has made a major difference to the standard of cricket that our squad has played" [S2].

Having been involved in the 2016 trials and having seen the positive impact of the shorter pitch at under-10/11, the league involved also implemented shorter pitches for their under-12/13 age groups without waiting for the ECB recommendations to be published. This was in order to consolidate the improvements made by the players as they moved up an age group and avoid them taking a backward step by returning to disproportionately long pitches in the following seasons [S8].

Former England captain and Director of England Cricket, Sir Andrew Strauss, summarizes the impact of Loughborough's research on young players:

"The proposed changes to pitch lengths and formats are a product of extensive research and trialling conducted by ECB over the past 3 years. I am impressed by the evidence of an improvement in techniques for batting, bowling and fielding. However, the most exciting feedback has come from the players themselves who found the new formats increased their enjoyment of playing our great game" [S10].

5. Sources to corroborate the impact (indicative maximum of 10 references)

The following sources of corroboration can be made available upon request:

source	details	impact
S1	Howard Dytham, Level 4 county coach (formerly Derbyshire, now working with Warwickshire). Letter of support	improved outcomes and coaching practices
S2	ECB Coaches Association (2017) "Shortcut to Success". In <i>Coaching Insight</i> , 7, p. 30-31.	improved outcomes
S3	Martyn Kiel, ECB Coach Development Learning Design Lead. Letter of support.	policy change and altered coaching practice
S4	ECB (2018) "ECB Recommended Junior Formats". https://www.ecb.co.uk/play/junior/junior-formats/junior-pathway	policy change
S5	David Graveney OBE, National Performance Manager 2008-2020, ECB. Letter of support	policy change and improved outcomes
S6	Tessa Whieldon, League Engagement Executive, ECB. Letter of support	policy change
S7	ECB (2019) "How science made the junior formats more fun". In <i>Working in Partnership: ECB Annual Review 2018-19</i> , p. 24-25.	policy change
S8	Mark Lomas, Level 2 club coach (Etwall Cricket Club). Letter of support	improved outcomes and coaching practices
S9	ECB Coaches Association (2019) "Transitioning to junior formats", <i>Hitting the Seam</i> 41 (1)	altered coaching practice
S10	<i>The Cricketer</i> magazine article (7 th December 2018) "ECB shorten junior pitches in bid to make cricket more enjoyable" https://www.thecricketer.com/Topics/grass_roots/ecb_shorten_junior_pitches_in_bid_to_make_cricket_more_enjoyable.html	improved outcomes

