



Brief report

Can we prepare young female players for heading in football? The feasibility and acceptability of HeaderPrep



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ABSTRACT

This study investigated the feasibility and acceptability of a novel programme designed to prepare players to learn heading in football (HeaderPrep). Forty-five players from four different girls' teams (under-11, under-12, under-13, under-15) and five coaches completed the programme over six weeks followed by completion of an evaluation survey. Our findings suggest that the programme enhanced players' confidence in heading the ball. Additionally, both players and coaches observed improvements in heading skill development. Most players (84.4%) also stated they would recommend HeaderPrep to others and found it fun. HeaderPrep may be a feasible introduction prior to starting formal heading training in football.

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1. Introduction

A header is defined as a head-to-ball contact where the player makes a deliberate movement to redirect the trajectory of the ball using their head.¹ Despite the simplicity of this definition, heading is a complex technical skill.¹ To execute an effective header, players need to be able to track the ball's trajectory and time their run and/or jump as well as the movement of the head, trunk, and hips in readiness for ball contact.^{1–3} Women reportedly close their eyes earlier before the header and use less protective body positioning,¹ with these technical differences being hypothesised to explain why women may be more likely to be injured by the ball than men.¹ Despite the complexity and importance of heading as a mechanism to score goals as well as the frequency in which this skill is performed during matches,^{1,4} a recent survey of amateur football players in Australia reported that women and girls were significantly less likely (46%) to have been trained in heading technique when compared with men and boys (60%).⁵ Further, most survey respondents wanted to be taught "heading

technique based on player age, position and experience," with this being more popular in women and girls (79%) than in men and boys (61%).⁵

Globally there are limited heading coaching frameworks to support both players and coaches when learning or teaching the skill of heading. However, before players can learn how to technically head a ball, they need to develop fundamental skills such as ball tracking and body positioning which should be mastered prior to head-to-ball contact. HeaderPrep was created to bridge this gap by pre-conditioning and preparing young and/or inexperienced players for the coaching of heading technique. The objective of this study was to explore the feasibility and acceptability of HeaderPrep.

2. Methods

This study was approved by the institutional Human Research Ethics Committee at The University of Sydney (2023/810).

2.1. Participants

Four girls' teams (under-11s, under-12s, under-13s and under-15s) from one National Premier League club (the highest level of youth representative football in Australia) agreed to trial HeaderPrep. Participants

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included players and coaching staff (technical directors—head of club development and coaches).

2.2. HeaderPrep

Content for HeaderPrep was developed based on earlier research^{4,6–9} and structured similarly to the 11+¹⁰ and Football Australia Perform +¹¹

programmes to facilitate effective communication of the programme's content. HeaderPrep aims to teach the preparatory movement skills necessary for heading, rather than being a tool to specifically teach header technique (Fig. 1). The header drills are encouraged to be completed using a lighter, and/or lower pressure ball. See the Supplementary methods for further details on HeaderPrep and instructions on how to complete the programme.

Header Prep

Building Capacity • Strength & Neuromuscular Control • In training or home (2-3 minutes)

Neuromuscular neck exercises to assist in developing strength and movement control in preparation for ball-head contact.

LEVEL 1

<p>NECK FLEXORS rocking</p>  <ul style="list-style-type: none"> • Sitting on the ground. • Hold knees and tuck chin in before slowly rolling back and forth while keeping head from touching the ground. • 1x 30 seconds 	<p>NECK FLEXORS rocking & speed</p>  <ul style="list-style-type: none"> • Increase your speed using balls of feet to push off the ground. • Do not let your head touch the ground. • 1x 30 seconds
<p>NECK ROTATORS rocking</p>  <ul style="list-style-type: none"> • Turn head to one side and slowly roll back and forth. • Complete for both sides. • Do not let head touch the ground. • 1x 30 seconds each side 	<p>NECK ROTATORS dynamic rotation</p>  <ul style="list-style-type: none"> • Turn head to one side and roll back and forth. • Complete for both sides. • Do not let head touch the ground. • 1x 30 seconds each side

LEVEL 2

<p>NECK FLEXORS rocking & speed</p>  <ul style="list-style-type: none"> • Do not hold your knees and complete fast rolling back and forth movements. • Do not let your head touch the ground. • 1x 30 seconds 	<p>NECK ROTATORS dynamic & speed</p>  <ul style="list-style-type: none"> • Turn your head to one side and then the other as you roll back and forth. • Do not let your head touch the ground. • 2 x 30 seconds
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LEVEL 3

<p>NECK FLEXORS rocking & speed</p>  <ul style="list-style-type: none"> • Do not hold your knees and complete fast rolling back and forth movements. • Do not let your head touch the ground. • 1x 30 seconds 	<p>NECK ROTATORS dynamic & speed</p>  <ul style="list-style-type: none"> • Turn your head to one side and then the other as you roll back and forth. • Do not let your head touch the ground. • 2 x 30 seconds
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Preparation • Movement & Resilience • training or home (~6 minutes)

Preparatory skills for heading, commencing without ball-head contact and progressing to a balloon or light ball.

LEVEL 1

<p>ON THE SPOT catch ball</p>  <ul style="list-style-type: none"> • Partner throws ball at head height. Player shifts weight to front foot and catches ball in front of forehead. • 1x 30 seconds. 3 sets 	<p>ON THE SPOT light ball header</p>  <ul style="list-style-type: none"> • Partner throws ball to players forehead lightly. • Player shifts weight from back to front foot. • Player heads ball back to partner. • Keep eyes open to see the ball and connect with forehead. • 1x 30 seconds. 3 sets
<p>BACK & FORTH catch ball</p>  <ul style="list-style-type: none"> • Stand 5m away from partner. • Player moves toward partner. • Partner throws ball at forehead height to be caught. • Repeat moving forwards/backward. • 1x 30 seconds. 3 sets 	<p>BACK & FORTH light ball header</p>  <ul style="list-style-type: none"> • Player moves toward partner. • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving forwards/backwards • 1x 30 seconds. 3 sets
<p>SIDE TO SIDE catch ball</p>  <ul style="list-style-type: none"> • Player moves to their right. • Partner throws ball at forehead height to be caught. • Repeat moving to left and right side of partner. • 1x 30 seconds. 3 sets 	<p>SIDE TO SIDE light ball header</p>  <ul style="list-style-type: none"> • Player moves to their right. • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving left and right side of partner • 1x 30 seconds. 3 sets
<p>JUMPING catch ball</p>  <ul style="list-style-type: none"> • Stand 5m away from partner with feet shoulder width apart. • As the player jumps, the ball is thrown towards the players forehead. • Player catches the ball and lands, returning the ball and repeating. • 1x 30 seconds. 3 sets 	<p>JUMPING light ball header</p>  <ul style="list-style-type: none"> • As the player jumps, the ball is thrown at the players forehead. • Player heads the ball back to partner. Keep eyes open to see the ball and connect with forehead. • 1x 30 seconds. 3 sets

LEVEL 2

<p>ON THE SPOT same</p>  <ul style="list-style-type: none"> • Position: Stand shoulder to shoulder with partner ~5m apart. 	<p>ON THE SPOT no bump</p>  <ul style="list-style-type: none"> • On the count, both players jump and bump shoulders. • A ball is thrown toward the player's forehead. • Taking turns, each player performs a heading action with their head • 1x 30 seconds. 3 sets
<p>BACK & FORTH</p>  <ul style="list-style-type: none"> • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving forwards/backwards • 1x 30 seconds. 3 sets 	<p>BACK & FORTH</p>  <ul style="list-style-type: none"> • Player moves toward partner. • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving forwards/backwards • 1x 30 seconds. 3 sets
<p>SIDE TO SIDE</p>  <ul style="list-style-type: none"> • Player moves to their right. • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving left and right side of partner • 1x 30 seconds. 3 sets 	<p>SIDE TO SIDE</p>  <ul style="list-style-type: none"> • Player moves to their right. • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving left and right side of partner • 1x 30 seconds. 3 sets
<p>JUMPING</p>  <ul style="list-style-type: none"> • As the player jumps, the ball is thrown at the players forehead. • Player catches the ball and lands, returning the ball and repeating. • 1x 30 seconds. 3 sets 	<p>JUMPING</p>  <ul style="list-style-type: none"> • As the player jumps, the ball is thrown at the players forehead. • Player heads the ball back to partner. Keep eyes open to see the ball and connect with forehead. • 1x 30 seconds. 3 sets

LEVEL 3

<p>AERIAL DUEL catch ball</p>  <ul style="list-style-type: none"> • On the count, both players jump and bump shoulders. • A ball is thrown toward the player's forehead. • Taking turns, each player catches the ball with their forehead • 1x 30 seconds. 3 sets 	<p>AERIAL DUEL no bump</p>  <ul style="list-style-type: none"> • On the count, both players jump and bump shoulders. • A ball is thrown toward the player's forehead. • Taking turns, each player heads the ball back to the thrower • 1x 30 seconds. 3 sets
<p>AERIAL DUEL</p>  <ul style="list-style-type: none"> • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving forwards/backwards • 1x 30 seconds. 3 sets 	<p>AERIAL DUEL</p>  <ul style="list-style-type: none"> • Player moves toward partner. • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving forwards/backwards • 1x 30 seconds. 3 sets
<p>AERIAL DUEL</p>  <ul style="list-style-type: none"> • Partner throws ball at forehead height. • Player heads the ball back to partner. • Keep eyes open to see the ball and connect with forehead. • Repeat moving forwards/backwards • 1x 30 seconds. 3 sets 	<p>AERIAL DUEL</p>  <ul style="list-style-type: none"> • On the count, both players jump and bump shoulders. • Increase the intensity or power of the bump between the players. • A ball is thrown towards the players forehead • Taking turns, each player heads the ball back to the thrower • 1x 30 seconds. 3 sets

WHEN

- Pre & Off-season preparation
- Team warm ups
- Home activity for players

WHO

- Players young & old
- Particularly players Under 12
- Inexperienced & goalkeepers

PROGRESS

After mastering HeaderPrep, progress onto specific coaching of heading appropriate to the player's age and phase of development.

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Fig. 1. HeaderPrep infographic.

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HeaderPrep consists of two parts, each with their own levels of progression (Fig. 1: infographic supplied to players and coaches).

Part one: Building capacity – Includes neuromuscular neck exercises for the development of muscle activation and movement control in preparation for head-to-ball contact.

Part two: Preparation drills – These activities aim to teach preparatory skills for heading, such as tracking the flight of the ball, body positioning, timing, jumping and landing.

2.3. Procedure

All participating coaches were trained on how to deliver HeaderPrep via an in-person training session provided by AR, an experienced football coach and physiotherapist. During football training twice per week over a six-week period, coaches delivered the programme at any time during normal training sessions (HeaderPrep was not used before matches). Due to varying team schedules, some teams implemented the programme once per week whilst others

Table 1
Survey results of players and coaches post HeaderPrep.

		All players (n = 45), n (%)	All coaches (n = 5), n (%)
Age group	Under 11s	9 (20.0)	1 (20.0)
	Under 12s	9 (20.0)	1 (20.0)
	Under 13s	12 (26.7)	1 (20.0)
	Under 15s	15 (33.3)	2 (40.0)
Playing positions	Defence	16 (32.0)	–
	Mid-field	13 (26.0)	–
	Attack	14 (28.0)	–
	Goalkeeper	2 (4.0)	–
Heading confidence before HeaderPrep	Never headed ball	8 (17.8)	1 (20.0)
	Not confident	13 (28.9)	1 (20.0)
	Somewhat confident	18 (40.0)	3 (60.0)
	Confident	6 (13.3)	0 (0)
Received heading coaching before completing HeaderPrep ^a	Yes	20 (44.4)	2 (40.0)
Pain in head or neck when heading a ball before HeaderPrep	No	25 (55.6)	3 (60.0)
	Yes – but continued to play or train	19 (42.2)	–
	Yes – stopped playing or training	2 (4.4)	–
	No	20 (44.4)	–
	Never headed a ball	4 (8.9)	–
HeaderPrep completion frequency	Once	25 (55.6)	3 (60.0)
	Twice	20 (44.4)	2 (40.0)
Would you like to have more information or instruction on how to coach heading?	Yes	–	4 (80.0)
Do you have any concerns about heading in football?	No	–	1 (20.0)
	Yes	–	3 (60.0)
	No	–	2 (40.0)
Feasibility			
The neuromuscular neck exercises were easy to complete	Yes	32 (71.1)	–
	No, disagree	5 (11.1)	–
	Not sure	8 (17.8)	–
The neuromuscular neck exercises were easy to teach	Completely agree	–	2 (40.0)
	Somewhat disagree	–	3 (60.0)
The catching the ball drills were a good way to start the programme	Yes	40 (88.9)	4 (80.0)
	No, disagree	2 (4.4)	0 (0)
	Not sure	3 (6.7)	1 (20.0)
I felt ready/I felt the players were ready to start the heading drills contained in the 'Preparation' section	Yes	45 (100)	5 (100)
I felt/I felt the players were comfortable completing the aerial duels in the 'Preparation' section	Yes	40 (88.9)	5 (100)
HeaderPrep did not take too long to complete	Not sure	5 (11.1)	–
	Yes	37 (82.2)	5 (100)
	No, disagree	1 (2.2)	–
	Not sure	7 (15.6)	–
Acceptability			
Did you like completing HeaderPrep? ^b	Yes	37 (82.2)	2 (40.0)
	Not sure	8 (17.8)	3 (60.0)
I think completing HeaderPrep has prepared me for heading a ball	Yes	37 (82.2)	–
	Not sure	8 (17.8)	–
I think completing HeaderPrep has prepared most players for heading a ball	Completely agree	–	3 (60.0)
	Neither agree nor disagree	–	2 (40.0)
I feel/I feel more players are more confident heading a ball now	Yes	38 (84.4)	5 (100)
	No, disagree	2 (4.4)	–
	Not sure	5 (11.1)	–
I have seen a positive difference to my players' heading skills since commencing HeaderPrep?	Completely agree	–	3 (60.0)
I would like to continue completing HeaderPrep	Somewhat agree	–	2 (40.0)
	Yes	37 (82.2)	–
	Not sure	8 (17.8)	–
I would like to continue completing HeaderPrep with my team	Completely agree	–	2 (40.0)
	Somewhat agree	–	1 (20.0)
	Neither agree nor disagree	–	2 (40.0)
Would you recommend HeaderPrep?	Yes	38 (84.4)	3 (60.0)
	Not sure	7 (15.6)	2 (40.0)

^a Coaches were asked if they had ever been taught how to coach heading.

^b Coaches were asked if they liked teaching HeaderPrep.

completed it twice per week. As this study aimed to assess the feasibility and acceptability of HeaderPrep, the programme was taught to be completed in full (see Fig. 1) without any separation of parts 1 and 2 (with part 1 also being completed before part 2). The same researcher (AR) observed the first session for all teams, and again after three weeks to promote implementation and adherence, with appropriate feedback provided to coaches as required. No additional observations were included to facilitate assessment of the programme's feasibility and acceptability under real-world conditions. No other influence or engagement in the delivery of HeaderPrep was undertaken by any researcher.

2.4. Data collection and analysis

An anonymous online survey using Research Electronic Data capture (REDCap, Nashville, TN, US)¹² assessed the feasibility and acceptability of HeaderPrep. Feasibility refers to the perceived practicality of implementing HeaderPrep within a club environment (such as the time taken to complete HeaderPrep), whereas acceptability refers to how well HeaderPrep was received by players and coaches (such as did they perceive value in completing HeaderPrep).

Table 1 outlines the survey questions, distributed to players and coaches via email following the six-week trial period. Players and coaches were also able to add free text comments on their experience completing HeaderPrep including any recommended changes. HeaderPrep was completed by all teams during June–August 2024. The survey was administered between August and October 2024, allowing participants time to reflect on their experiences and ensuring availability at the end of the amateur football season in Victoria (Australia).

The survey responses included both quantitative and qualitative data. Quantitative data were analysed using IBM SPSS Statistics (version 29), with categorical data displayed as counts and percentages. Open text, qualitative data were analysed using conventional content analysis. Two authors (AR and KP) reviewed the open-ended responses and then discussed the data and emergent categories, until a consensus was reached.

3. Results

A total of 59 players and 5 coaches from 4 girls' teams completed the programme, of these 45 players and five coaches (one coach from each team, plus 2 coaches from the under-15 team) completed a survey (78% response rate).

3.1. Players

Before completing HeaderPrep, 19 players (42.2%) reported that they had experienced pain when heading a ball and 4.4% stopped playing or training due to pain after heading (Table 1). Eight players (17.8%) reported never having headed a ball, with 13 players (28.9%) reporting that they were not confident in heading a ball (Appendix 1). Approximately half of all players (55.6%) reported that they'd never been coached how to head a ball, despite no restrictions on heading in matches.

Most players ($n = 40$, 88.9%) felt catching a ball was a good way to start the programme and all expressed readiness when progressing the heading drills, including performing aerial duels ($n = 40$, 88.9%). Whilst most players ($n = 32$, 71.1%) reported that the neuromuscular neck exercises were easy to complete, 5 players did not, with a further 8 players being unsure (Appendix 1). Players ($n = 37$, 82.2%) also reported liking HeaderPrep, and 84.4% ($n = 38$) would recommend it. Most players ($n = 38$, 84.4%) felt more confident heading a ball after completing HeaderPrep, and 82.2% ($n = 37$) reported that they would like to continue the programme.

3.2. Coaches

Before starting HeaderPrep, 3 out of 5 coaches reported that they hadn't received formal training on how to coach heading, with varying confidence levels on coaching heading to players. Most coaches agreed that the catching drills were a good starting point, with observation of player readiness to begin the heading drills and increased confidence in heading following completion of HeaderPrep. Four out of five coaches expressed that they would like more information on coaching heading (Table 1). Appendix 2 provides a summary of player and coach free text responses.

4. Discussion

Our results indicated that HeaderPrep was both feasible and accepted among girls' teams. This study is an important first step in the design-process, before exploring effectiveness of HeaderPrep with a larger group of players.

Widespread adoption of exercise-based programmes requires them to be engaging with a clear understanding of why the programme is important and relevant to their sport.¹³ Players generally found HeaderPrep to be fun to complete, with many also reporting that it increased both their confidence and skill development with heading (also noted by coaches).

However, some coaches and players found the neuromuscular neck exercises challenging to complete which might have been influenced by their understanding of the rationale underpinning these exercises, affirming the need to clearly explain the value of each component to ensure better understanding and assist buy-in and adherence. Heading is a fast, dynamic skill which places importance on player's activation of their neck musculature to resist head displacement on ball contact. As such these neck exercises were specifically designed for football to emphasise player's neuromuscular control whereby reducing head acceleration during heading⁶ and potential concussive events in adolescent football players.⁹ Thus, once players have mastered HeaderPrep, the neuromuscular neck exercises could be integrated into existing injury prevention programmes as an on-going addition.

The optimal age to introduce heading is often debated. Research indicates this might be as early as 9–10 years but players can demonstrate readiness at different ages, which may depend on when they first start playing football (with differences between boys and girls).^{4,14–16} The age to start HeaderPrep should be left to coach discretion based on their players and playing style (including heading frequency). For countries such as the United States and England where age-related heading restrictions exist coaches will have less autonomy in when to complete HeaderPrep but it is advised that players start to learn heading within a controlled training environment before being exposed to heading in competitive matches (where higher rates of head injuries are reported).¹⁶ HeaderPrep commences without head-to-ball contact, to focus on the foundational skills of ball tracking, with catching the ball included to limit head-to-ball contact in this early stage of development but also to encourage players to use their arms, important for protective body positioning.¹ Coaches are encouraged to progress the programme at their own pace.

Some coaches and players commented that they would like more technical heading skills to be included in the programme. HeaderPrep was not designed as a heading coaching framework, but this feedback underscores the need for more coaching specific resources and instruction on how to coach heading technique in players (for example Get aHEAD Safely in Soccer programme)¹⁷, more importantly given that 56% of players reported no previous instruction on heading and none of the coaches reported feeling confident to teach heading technique.

4.1. Limitations

This programme was implemented with a limited number of girls' teams and coaches. Consequently, future research on HeaderPrep should

investigate its feasibility and acceptability among boys and across different levels of the sport. Although there were no differences in feasibility and acceptability between players and coaches who completed HeaderPrep once a week versus twice a week (56% vs 44%), we recommend that any future research that explores the effectiveness of HeaderPrep also analyses dosage within an appropriately powered study for this outcome.

5. Conclusion

Overall, players and coaches found HeaderPrep to be feasible and acceptable to implement into routine football training sessions to prepare players for the skill of heading. Further research is required to explore the effectiveness of HeaderPrep on heading technique and/or injury outcomes.

CRediT authorship contribution statement

Andrew Ross: Methodology, Project administration, Data curation, Formal analysis, Visualisation, Writing – co-wrote original draft. Guarantor.

Matthew Whalan: Conceptualisation, Methodology, Writing – Review & editing.

Rob Duffield: Conceptualisation, Methodology, Writing – Review & editing.

Kerry Peek: Conceptualisation, Methodology, Project administration, Resources, Writing – co-wrote original draft.

Confirmation of ethical compliance

This study was approved by the institutional Human Research Ethics Committee at The University of Sydney (2023/810).

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Declaration of interest statement

KP is employed by FIFA as a Medical Researcher where she leads FIFA's Heading Expert Group. She has also been an Injury Spotter (concussion) for FIFA organised tournaments since 2023.

Acknowledgement

Thank you to the players, coaches and club who agreed to participate in this project.

Appendix 1. Survey results of players by age group

		Under 11s n, (%)	Under 12s n, (%)	Under 13s n, (%)	Under 15s n, (%)
Playing positions	Defence	2 (22.2)	4 (44.4)	4 (33.3)	6 (40.0)
	Mid-field	4 (44.4)	2 (22.2)	4 (33.3)	3 (20.0)
	Attack	3 (33.3)	3 (33.3)	3 (25.5)	5 (33.3)
	Goalkeeper	0 (0)	0 (0)	1 (8.3)	1 (6.7)
Heading confidence before HeaderPrep	Never headed ball	5 (55.6)	2 (22.2)	1 (8.3)	0 (0)
	Not confident	3 (33.3)	2 (22.2)	4 (33.3)	4 (26.7)
	Somewhat confident	1 (11.1)	5 (55.6)	5 (41.7)	7 (46.7)
	Confident	0 (0)	(0)	2 (16.7)	4 (26.7)
Received heading coaching before HeaderPrep	Yes	1 (11.1)	6 (66.7)	7 (58.3)	11 (73.3)
	No	8 (88.9)	3 (33.3)	5 (41.7)	4 (26.7)
Pain in head or neck when heading ball before HeaderPrep	Yes – but continued to play or train	2 (22.2)	2 (22.2)	7 (58.3)	8 (53.3)
	Yes – stopped playing or training	0 (0)	0 (0)	0 (0)	2 (13.3)
	No	3 (33.3)	7 (77.8)	5 (41.7)	5 (33.3)
	Never headed ball	4 (44.4)	0 (0)	0 (0)	0 (0)
Frequency in completing HeaderPrep (per week)	Once	8 (88.9)	5 (55.6)	11 (91.7)	1 (6.7)
	Twice	1 (11.1)	4 (44.4)	1 (8.3)	14 (93.3)
Did you like completing HeaderPrep?	Yes	7 (77.8)	9 (100)	10 (83.3)	11 (73.3)
	Not sure	2 (22.2)	0 (0)	2 (16.7)	4 (26.7)
Would you recommend HeaderPrep?	Yes	7 (77.8)	8 (88.9)	11 (91.7)	12 (80.0)
	Not sure	2 (22.2)	1 (11.1)	1 (8.3)	3 (20.0)
The neuromuscular neck exercises were easy to complete	Yes	7 (77.8)	8 (88.9)	11 (91.7)	6 (40.0)
	No, disagree	1 (11.1)	0 (0)	0 (0)	3 (20.0)
	Not sure	1 (11.1)	1 (11.1)	0 (0)	6 (40.0)
The ball catching drills were a good way to start the programme	Yes	7 (77.8)	9 (100)	11 (91.7)	13 (86.7)
	No, disagree	1 (11.1)	0 (0)	0 (0)	1 (6.7)
	Not sure	1 (11.1)	0 (0)	1 (8.3)	1 (6.7)
I felt ready to start the heading drills contained in the 'Preparation' section	Yes	9 (100)	9 (100)	12 (100)	15 (100)
I felt comfortable completing the aerial duels in the 'Preparation' section	Yes	6 (66.7)	9 (100)	12 (100)	13 (86.7)
	Not sure	3 (33.3)	0 (0)	0 (0)	2 (13.3)
HeaderPrep did not take too long to complete	Yes	9 (100)	8 (88.9)	11 (91.7)	9 (60.0)
	No, disagree	0 (0)	0 (0)	1 (8.3)	0 (0)
	Not sure	0 (0)	1 (11.1)	0 (0)	6 (40.0)
I think completing HeaderPrep has prepared me for heading a ball	Yes	5 (55.6)	9 (100)	12 (100)	11 (73.3)
	Not sure	4 (44.4)	0 (0)	0 (0)	4 (26.7)
I feel more confident heading a ball now	Yes	6 (66.7)	9 (100)	12 (100)	11 (73.3)
	No, disagree	2 (22.2)	0 (0)	0 (0)	0 (0)
	Not sure	1 (11.1)	0 (0)	0 (0)	4 (26.7)
I would like to continue completing HeaderPrep	Yes	8 (88.9)	9 (100)	10 (83.3)	10 (66.7)
	Not sure	1 (11.1)	0 (0)	2 (16.7)	5 (33.3)

Appendix 2. Free text feedback from players and coaches

Item	Frequency (n =)	Selected quotes
<i>What players liked (28 comments)</i>		
Fun to do	11	"It was fun and engaging" "Fun overall" "I like how I got more practice and how it was fun."
Increased their confidence with heading	6	"Taught me how to header the ball. I feel better now about it." "It has given me more confidence as I was scared to head the ball after taking a knock to the head a year ago."
Something new	5	"I liked doing header prep because it got me ready for next season and so then I can be almost above standard for heading, but mainly because I enjoyed it because it was something new to me." "Learned some new information"
Clear and easy to follow	4	"It was explained clearly in an understanding way for me." "Instructions were clear and helpful"
<i>What coaches liked (4 comments)</i>		
Easy to do	1	"Easy to complete"
Improved technique	3	"Was able to effectively improve header technique" "Helped the players to adapt" "There was a good progression from learning basic technique to applying it in more game like situation."
<i>Potential changes (players) (15 comments)</i>		
Neck exercises	7	"The rolling exercises at the start were weird" "It was wet on the ground when we did the rolling exercises"
Drills related to heading technique	5	"Once the technique had been established, the chance to practice with a normal ball" "How to position yourself to score a header in a future game." "Try and header into goal or with an objective eg defensive header" "Add technical drills"
<i>Potential changes (coaches) (4 comments)</i>		
Neck exercises	1	"The rolling exercises at the start were a bit strange."
Age to start programme	2	"Maybe 11 is a little bit young"
Timing	1	"The aerial drill may be excluded for girls 12 and younger as it may increase head knocks." "Needs to be done in pre-season"

Supplementary methods

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jams.2025.05.014>.

Data availability

All data are available within the manuscript.

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