

Cricket Australia Junior Bowling Guidelines

2019/20



Community Junior Recommendations

Age	Match Recommendations	Age	Pre-season Preparation Targets
u11	Two overs max each spell 4 overs max per match day	u13	2 weeks gradual bowling prior to season/tournament
u13	Four overs max each spell 8 overs max per match day	u15	4 weeks gradual bowling prior to season/tournament
u15	Five overs max each spell 12 overs max per match day	u17	6 weeks gradual bowling prior to season/tournament
u17	Six overs max each spell 16 overs max per match day	u19	8 weeks gradual bowling prior to season/tournament
u19	Seven overs max each spell 20 overs max per match day		
Rest between spells should be the same number of overs from the same end as the completed spell			
Recovery Guidelines			
Allow one easy week (e.g. 1-2 bowling sessions) in every 4 weeks			
Schedule a week off bowling after every 10-12 weeks of bowling to allow your body to recover			
		* It is recognized that some matches are scheduled on consecutive days both in tournaments & club cricket. In these instances, players may bowl on consecutive days but should strictly adhere to the other aspects of the recommended targets, namely, to not exceed bowling 3 days per week and 5 over spells .	
		** Minimum of 20 mins between training spells	

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** Minimum of 20 mins between training spells

Elite Junior (Pathway) Recommendations

State Pathway Squads

Age	Recommended Preparation Targets
u13	2 weeks gradual bowling preparation prior to the season
u15	4 weeks gradual bowling preparation prior to the season Average 90-100 balls per week in the month before state/national champs Plan recovery (easy week) just before and after the state/national champs
u17	8-10 weeks gradual bowling preparation prior to the season Average 100-120 balls per week in the month before state/national champs Plan recovery (easy week) just before and after the state/national champs
u19	8-10 weeks gradual bowling preparation prior to the season Average 120-140 balls per week in the month before state/national champs Plan recovery (easy week) just before and after the state/national champs
Age	Recommended Training Targets
u15 – u17	At least 1 day off between bowling days* A maximum of 3 bowling days per week (match & training) A maximum of 5 overs in each bowling spell **
u19	No more than 2 bowling days in a row A maximum of 4 bowling days per week (match & training) A maximum of 6 overs in each bowling spell **

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Age	Match Recommendations
u11	Two overs max each spell 4 overs max per match day
u13	Four overs max each spell 8 overs max per match day
u15	Five overs max each spell 12 overs max per match day
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** Minimum of 20 mins between training spells

2019/20 Junior (Pathway) Bowling Guidelines

The pathway bowling guidelines are now reviewed annually.

For the 2019/20 season there are some changes that are explained in this document along with some background information:

New data shows that players who sustain a lumbar bone stress injury coming through the pathway are 2.5 times more likely to have a lumbar bone stress injury (typically a stress fracture) when they progress to state and international levels of cricket. Therefore we can help to improve the future resilience of our elite adult bowlers by managing them well through the pathway.

In the past 2 years there have been 30 lumbar bone stress injuries (likely an underestimate) in the u15 group, detected at an average age of 15 and approximately 18 months after peak height velocity (maximum growth spurt period). This highlights the need to carefully monitor youth fast bowlers when they are growing because bones are relatively weaker. They grow long before they grow strong!

Given that skeletal maturity (bone strength) changes considerably before and after puberty, and that the u15& u17 bowlers are at a particularly high risk of lumbar bone stress injury (the u17's approximately twice as high as the u19 group), it did not make sense that bowling recommendations did not distinguish between these groups. We are now looking at the u19 guidelines differently to u17/u15s.

2019/20 Pathway Bowling Guidelines

Preparation & Recovery

The emphasis of the guidelines are based on **preparation** and **recovery** as the key pillars.

Preparation

A gradual build up in bowling volume leading into a season or tournament so the player is physically ready to cope with the loads. This takes time (usually > 10 weeks) and some planning. In the 3-4 weeks leading into a season / tournament, bowlers should be close to expected match / weekly volumes and intensity.

We have changed the recommendation to a minimum bowling preparation period of 8-10 weeks (previously 6-8 weeks for u17 bowlers) for u17 & u19 bowlers to reflect the gradual build up required. For u15 bowlers, the minimum preparation has not changed (4 weeks) but longer lead in periods are recommended where possible.

Recovery

– is essential to allow the body (particularly bones, muscles and tendons) to recover, adapt and be ready for the next session (training or match). Recovery between spells (to alleviate short-term fatigue), training & matches (to allow bone to adapt) and after prolonged high load periods e.g. mid-season (to allow the physical and mental fatigue to resolve) are important injury prevention strategies and help maximise performance.

We recommend a week off bowling every 10-12 weeks, and a lighter bowling week every 4 weeks.

2019/20 Pathway Bowling Guidelines

Bowling frequency = the number of consecutive days and days per week bowling.

Changes have been made to improve recovery time between sessions and allow bone to adapt to the load during the all-important growth period. The evidence from cricket research in these age groups, as well as general bone research, identifies recovery time as critical for bone adaptation and strength.

Under 15 and Under 17 bowlers

Aim to have a day off between bowling sessions and a maximum of 3 sessions per week (previously 4-days per week).

Under 19 bowlers

Aim to limit the number of consecutive days bowling to 2-days in a row & maximum of 4-days bowling per week.

Bowling Spell Lengths = the number overs / deliveries bowled consecutively

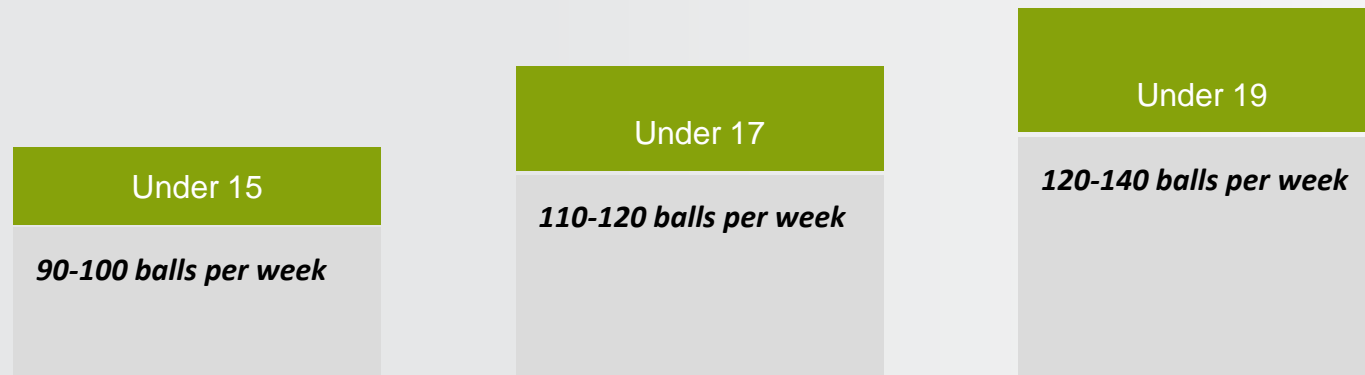
Whilst the recommendation for maximum length of match bowling spells has remained unchanged (6 overs for u17 & 7 overs for u19), ***there is now guidance provided for length of bowling spells at training sessions to manage fatigue at training with a view of making the same changes in matches in the 2020/21 season.***

Cricket Australia research shows that adult elite bowlers rarely bowl spells longer than 6 or 7 overs in matches. For example, in the 2018/19 Sheffield Shield - 91% of bowling spells were 6 overs or less, and 97% of spells are 7 overs or less. In male One-Day domestic matches 98% of spells are 6 overs or less and 99% are 7 overs or less.

2019/20 Pathway Bowling Guidelines

Bowling volume targets = how many balls bowled in a given period (e.g. balls per week or month)

We have reviewed the implementation of the existing recommendations and decided that the volume targets (balls bowled per week) needed revising because most pathway bowlers were bowling consistently less than the target range (bowled less than the recommended balls per week). As such we believe that the existing guidelines were too high especially as many of then adult elite bowlers in Australian Cricket systems (e.g. state bowlers) were not reaching the u19 recommendations consistently. As such the new recommended training volumes are:



We encourage players to gradually build up their bowling volumes in the lead up to the cricket season or tournament.

Cricket Australia research shows us that these are more realistic targets for bowlers in the preparation periods – particularly in the weeks leading into the season or tournaments.

At the community level – the recommended weekly bowling volume targets have been removed to reduce the amount of information being provided. It is anticipated that by adhering to the recommended frequency / recovery recommendations, and bowling spell lengths, this result in the desired outcome or manageable bowling volumes.

2019/20 Pathway Bowling Guidelines

Bowling Recommendation – simple message

Under 15 and Under 17 bowlers

1 3 5

1,3,5 message [1 day off between bowling session, 3 days per week, 5 overs in a spell]

Under 19 bowlers

2 4 6

2,4,6 message [maximum 2 bowling days in a row , 4 days per week, 6 overs in a spell].

Elite v Community Cricket recommendations

Elite Recommendations

Elite Recommendations relate to bowlers in the elite pathways (state squads etc..) who have access to coaches, fitness and medical staff to help manage their training programs and injury concerns.
Weekly bowling volume targets are included as they have access to tools and resources to monitor this.

Community Recommendations

Community Recommendations target the broader cricket community. The bowling guidelines are available via the Cricket Australia Well-Played document
<https://www.community.cricket.com.au/clubs/running-your-club/well-played>

Common sense Approach

The guidelines are general in nature and every bowler needs to be managed on an individual basis. Some will cope with more or less load as there are other important variables other than age (e.g. physical maturity, technique, bowling speed, fitness, previous injury etc..) that are also important factors.

2019/20 Pathway Bowling Guidelines

Frequently Asked Questions

We anticipate that common sense will be used in interpreting the guidelines. These are some of the frequently asked questions

1. *Can a u17 bowler play 2-days in a row?*

As an occasional occurrence, yes, particularly when matches are scheduled on consecutive days. If this occurs bowlers should strictly adhere to other aspects of the guidelines, particularly on the number of bowling sessions per week and the number of overs in a spell (and break between them). But ideally, this age group should avoid back-to-back days to allow their body to adapt.

2. *If someone bowls a small number overs, such as 2-3 overs at a training / match, does this qualify as a bowling session?*

Common sense would suggest that there are very low loads that can be considered as low volume & managed appropriately. If the bowler feels okay, are well prepared & recovered well, they can bowl again soon afterwards (e.g next day)

3. *On the non-bowling days – can the bowler do other training?*

Yes – fitness & strength training, technical bowling or low intensity bowling (bowling 3-4 steps etc..), batting, fielding are all examples of what is possible on non-bowling days

4. *Is bowling intensity important?*

Yes – bowling at or near maximum (match) intensity, generally results in high stress on the body so appropriate recovery periods are required. More lower intensity bowling can be factored into training plans and requires shorter recovery periods.

5. *How can bowling intensity be measured?*

A fairly simple way to measure bowling intensity for the player to rate the intensity out of 100%, with 100% being match intensity. Anything above 80% is considered high intensity bowling. Anything below 50% is low intensity bowling

6. *How can a bowler increase their bowling volumes safely through training?*

Like matches, if bowling at training is planned in multiple spells, then this will allow for some higher volume days. E.g. bowl 5 overs, have a break or do some other training & have another bowling spell. The break between spells allows your body to recover for the next spell

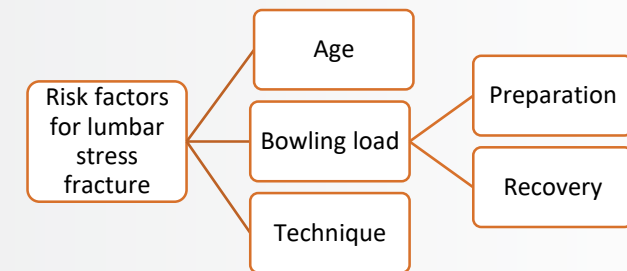
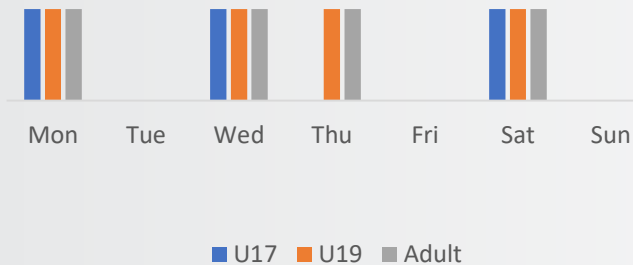
7. *What if there are multiple matches in a week?*

Use the guidelines for the bowlers age group as a guide for frequency and recovery. Start by removing bowling session(s) at training that week to stay within the guidelines and/or plan for an easier (less bowling) week the next week. Use common sense, sometimes you just have to miss a game as well to make sure your body can cope

Summary of changes to youth bowling guidelines: 2018/19 to 2019/20

What do we know? <i>Research has shown an increased risk of injury associated with*:</i>	Current bowling guidelines 2018-19	Proposed bowling guidelines 2019-20
Low career and high 3-month bowling load ¹	Gradual bowling preparation 6-8 (U17) or 8-10 (U19) weeks leading into season	Gradual bowling preparation 8-10 weeks leading into season
<120 and >180 balls per week ^{2,3} Players bowled less balls than the 2018-19 recommended targets (CA internal analysis)	Target balls 120-150 (U17) or 150-180 (U19) per week	Target balls 100-120 (U17) or 120-140 (U19) per week in month before season/tournament
<2 days between bowling sessions ^{2,4}	Avoid more than 2 days in a row	Target at least 1 day off between bowling sessions (U17); max 2 days in a row (U19)
>2.5 bowling sessions per week ⁵	Avoid more than 4 days per week	Target maximum 3 (U17) or 4 (U19) days per week
High load periods not followed by recovery period ⁴	1 easy bowling week every 4-5 weeks	1 easy bowling week every 4 weeks Plan recovery around high load periods (e.g., tournament)
<2 weeks off bowling during the season ⁴	1 week off bowling every 10-12 weeks	1 week off bowling every 10-12 weeks

Example week: bowling sessions



1. Orchard JW, Blanch P, Paoloni J, et al. Cricket fast bowling workload patterns as risk factors for tendon, muscle, bone and joint injuries. *Br J Sports Med.* 2015; 49(16):1064-1068. [elite adult male]
2. Dennis R, Farhart R, Goumas C, Orchard J. Bowling workload and the risk of injury in elite cricket fast bowlers. *J Sci Med Sport.* 2003; 6(3):359-367. [elite adult male]
3. Hulin BT, Gabbett TJ, Blanch P, Chapman P, Bailey D, Orchard JW. Spikes in acute workload are associated with increased injury risk in elite cricket fast bowlers. *Br J Sports Med.* 2014; 48(8):708-712. [elite adult male]
4. Kountouris A, Sims K, Beakley D, et al. MRI bone marrow oedema precedes lumbar bone stress injury diagnosis in junior elite cricket fast bowlers. *Br J Sports Med.* 2018; Published Online First: 13 November 2018. [pathway male]
5. Dennis RJ, Finch CF, Farhart PJ. Is bowling workload a risk factor for injury to Australian junior cricket fast bowlers? *Br J Sports Med.* 2005; 39(11):843-846. [club/district junior male]

* Note all research is in males, varied ages and levels as indicated in square brackets after each reference.