RECREATIONAL JUNIOR FAST BOWLING GUIDANCE 2024

ECB SCIENCE & MEDICINE

Junior Fast Bowling Guidance

Why do we need fast bowling guidance?

Fast bowling places enormous load on the lumbar (lower) spine, with forces estimated to be approximately 3 times a bowler's bodyweight every delivery.

The movement of the lumbar spine during fast bowling, including extension (leaning back), flexion (bending forwards), side flexion (leaning away from the bowling arm) and rotation, causes the bones within the lumbar spine to bend, contort and twist under this immense loading. This loading, coupled with adequate bowling volume, intensity, and rest, triggers large adaptation to the lumbar spine with the bone mineral density (a surrogate measure for bone strength) in elite fast bowlers being up to 44% greater than the typical person, and up to 33% greater than rugby players. This remarkable bone adaptation provides protection to lumbar bone stress injury (LBSI). LBSI is the most prevalent injury in cricket, meaning that at any one time the highest number of cricketers are unable to play due to these injuries.

Too much bowling, particularly over short periods (e.g., 7-days), can result in small areas of bone damage or cracks in the bone, which if not immediately addressed with sufficient rest periods, can lead to LBSI. LBSI's are a group of injuries which range from swelling around the bone (also known as bone stress, hot spot, or edema) to stress fractures. Approximately 15 years of development and progressive training is required to obtain the necessary bone strength to resist this bone damage. Therefore, young bowlers, who have not accrued these protective effects, are at higher risk of injury. In short, **extraordinary load** is applied to **underdeveloped bones**.

If a bowler suffers a spinal stress fracture, they may be unable to compete for up to 8 months or, in some instances, longer. This period out of the game can be hugely detrimental to skill and physical development of a young fast bowler, typically falling a year behind in both compared to their peers. Therefore, preventing these injuries from occurring is vital.

Research indicates that 2 of the key risk factors for LBSI are:

- The age of the bowler – Adolescent bowlers, particularly those in, or shortly after the growth spurt are of greatest risk, due to their lower bone strength.
- The bowler's workload – Multiple factors related to workload are associated with LBSI. This includes:
    - Too many overs per week, particularly if significantly greater than any other week in that season, causes excessive bone damage,
    - Too few overs per month, causes a reduction in bone strength,
    - Insufficient rest between bowling, prevents bone damage from healing.

Given that the age of a bowler is impossible to change, coaches should focus on ensuring correct workloads for the bowlers in their care and promote behaviours that support bone health.

Carefully managed workloads aid the prevention of LBSI by ensuring that protective bone strength is developed. This Fast-Bowling Guidance is a tool to do this, and is designed to support safe development of players, and reduce the risk of injury to junior fast bowlers.

Introduction:

This guidance is supplemental to, and **does not replace**, the bowling limits per spell and per day outlined in the ECB Fast Bowling Match Directives, which can be found on the ECB website and accessed here. You should read both documents.

The recommendations in this document apply to junior fast bowlers participating in any level of cricket in the recreational game, including County Age Grade cricket, but not Elite Player Pathways who have separate protocols to follow due to increased science and medicine support. A "Fast Bowler" means a bowler who attempts to deliver the ball at high intensity. This includes seam bowlers, swing bowlers and medium pace bowlers. Once a bowler has attempted to deliver one ball at high intensity, they are deemed a Fast Bowler and therefore should adhere to these recommendations whether they then go on to bowl other forms of delivery.

Players and coaches should consider the guidance for a bowler's age and not the level of cricket they are playing in. For example, a 13-year-old playing in an U15 league/match should follow the recommendations for a 13-year-old.

If a player is going through a growth spurt, which is defined as a rapid increase in growth velocity in excess of 7cm a year, the guidance for the age group below their current age group should be considered e.g., an U12 player deemed to be going through a growth spurt should consider the guidance for U11s.

A delivery should be counted as all those delivered in matches and those bowled in training with the intention of bowling at match or near match intensities. Only deliveries where there is a clear intention to bowl slower, e.g., walk throughs, running in at less than 50% of the typical run up speed, should be excluded.

Recommended Workload Management:

The ECB recommends the following maximum and minimum number of overs a junior fast bowler should bowl per week. Within these thresholds a protective effect against injury is expected to occur. Bowling loads greater or less than these recommended amounts (outside of prescribed in season or post season breaks) may place bowlers at greater risk of injury.

Age in years	Target overs per week
11 and below	12 – 16
12 & 13	16 – 20
14 & 15	20 – 24
16 & 17	22 – 26
18 & 19	24 – 28

In any 7-day period, there should be a maximum of 4 bowling days with only 1 instance of bowling on consecutive days.

Recommended Rest Periods:

In the recommendations below a 'rest day' means a day where an individual does not bowl. Carrying out other cricketing activities and participation in other sports does not prevent a day from counting as a rest day. However, if a young bowler also plays another 'overhead' sport (such as tennis or badminton etc.) these workloads should be managed carefully alongside bowling.

A full day of rest from bowling is recommended between days, except in the instance where very low or very high overs have been bowled, in which case multiple days of rest may be necessary.

The minimum number of rest days recommended following different bowling workloads is outlined below:

Age in years	0 days' rest	1 day's rest	2 days' rest
11 and below	<2 overs bowled	2 – 7 overs bowled	>7 overs bowled
12 & 13	<2 overs bowled	2 – 8 overs bowled	>8 overs bowled
14 & 15	<2 overs bowled	2 – 10 overs bowled	>10 overs bowled
16 & 17	<3 overs bowled	3 – 12 overs bowled	>12 overs bowled
18 &19	<3 overs bowled	3 – 14 overs bowled	>14 overs bowled

If a very high number of overs have been bowled in a week, the ECB recommend that a bowler's bowling workload for the following week is adapted appropriately.

Recommended bowling adjustments following loads which exceeded the recommended daily maximums:

Age in years	Overs Bowled	Recommended overs for following week	Overs Bowled	Recommendation
11 and below	16 – 22	8 – 10	> 22	7 consecutive days bowling rest to begin within 14 days of the breach of maximum workload.
12 & 13	20 – 26	12 – 14	> 26	
14 & 15	24 – 30	16 – 18	> 30	
16 & 17	26 – 32	18 – 20	> 32	
18 &19	28 – 35	20 – 22	> 35	

It is also recommended that junior fast bowlers adhere to the following general guidance on rest:

1. A 7 to 10-day bowling break either during the middle of the season, or when the recommended maximum weekly overs has been exceeded.

2. A low bowling volume week every 4 – 5 weeks, or when target overs have been exceeded, where 50% of target overs are bowled.
3. A post-season 4-week bowling break.

Ready to Bowl – recommended overs to build up to regular bowling for juniors:

It takes time for the body to be appropriately prepared to bowl at full intensity and at the necessary volumes for competition, even after only a short break. In fact, bone strength is reduced after only 2 weeks. The templates below outline recommended target overs for a bowler to follow to ensure they are ready to return to full intensity and volume of bowling after a break of 2 weeks or longer. This break in bowling could be due to an enforced rest period, injury, returning post off-season or other circumstances.

The templates outline a gradual return to bowling that aims to prevent over-loading of the player but help ensure tolerance to regular bowling is accrued.

Ready to Bowl template for overs bowled (bowled across 2-3 days in a week):

Number of weeks break	11 years and below	12 & 13 years	14 & 15 years	16 & U17 years	18 & 19 years
7 or more	4 – 6	6 – 8	8 – 10	8 – 10	8 – 10
6	6 – 8	8 – 10	8 – 12	10 – 12	10 – 12
5	6 – 8	10 – 12	10 – 14	12 – 16	12 – 16
4	8 – 10	10 – 12	12 – 16	16 – 20	16 – 20
3	10 – 12	12 – 16	14 – 18	16 – 20	16 – 20
2	12 – 14	14 – 18	16 – 20	18 – 22	20 – 24
			18 – 22	18 – 22	20 – 24
				20 – 24	22 – 26