

## Key Facts on Sports Nutrition Supplements

<b><u>Ingredient</u></b>	<b><u>Recommended Dosage</u></b>	<b><u>Key Benefits</u></b>	<b><u>When to Use</u></b>	<b><u>Evidence of Efficacy<sup>1</sup></u></b>	<b><u>Evidence of Safety<sup>1</sup></u></b>
Beta-Alanine	4g of beta-alanine <u>daily</u> for at least 2-4 weeks and 10-12 weeks ideally	- Delays muscle fatigue  <i>May be less effective in highly-trained athletes</i>	- High-intensity exercise	Strong evidence	Strong evidence  Adverse effects could include: Paresthesia (tingling, itchy sensation), skin rash
Caffeine	3-6mg per kg body weight caffeine about an hour before exercise  (1.36-2.72mg per lb bodyweight)	- Increases energy & delays fatigue - Enhances focus - Improves performance in both aerobic and anaerobic exercise	- Endurance Exercise (e.g. time to fatigue, time trials) - Power & Resistance Exercise (e.g. sprints, muscular strength and muscular endurance)	Strong evidence	Strong evidence. Reasonably safe up to 400 mg/day for adults  Adverse effects could include: insomnia, restlessness, nausea, vomiting, tachycardia, and arrhythmia

<sup>1</sup>The evidence of efficacy and safety is for the individual ingredients. The efficacy and safety of these ingredients might be different when they are combined with other ingredients in a product or training plan.

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Creatine Monohydrate	<p>3-5g of creatine monohydrate <u>daily</u> for at least 4 weeks</p> <p>Can also start with a loading phase of 20g/day (divided into 3 equal doses) for first 5-7 days before maintenance phase</p>	<ul style="list-style-type: none"> <li>- Increases high-intensity exercise capacity</li> <li>- Supports greater gains in lean body mass and muscular strength</li> <li>- Reduces DOMS (Delayed Onset Muscle Soreness)</li> </ul>	<ul style="list-style-type: none"> <li>- Repeated high-intensity exercise (e.g. team sports)</li> <li>- Short-term, high-intensity exercise (e.g. muscular strength/resistance and interval training)</li> </ul>	<p><b>Strong evidence</b></p> <p><i>Especially relevant for athletes with limited/no meat in their diets</i></p>	<p><b>Strong evidence.</b> Few safety concerns at typical doses even with long term use (studies up to 5 years)</p> <p>Adverse effects could include: initial weight gain due to water retention (~1-2kg week one); potential gastrointestinal distress especially when taken with caffeine</p>
Protein	<p>1.4-2.0g of protein per kg bodyweight <u>daily</u> and a minimum of 0.8g per kg bodyweight</p>	<ul style="list-style-type: none"> <li>- Supports greater gains in lean body mass and muscular strength</li> <li>- Reduces DOMS (Delayed Onset Muscle Soreness)</li> </ul>	<ul style="list-style-type: none"> <li>- Resistance training</li> </ul>	<p><b>Strong evidence</b></p> <p><i>Especially relevant for athletes with limited/no meat in their diets</i></p>	<p><b>Strong evidence.</b> Few safety concerns with excess protein being low risk.</p> <p>Adverse effects could include: potential gastrointestinal distress</p>

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Sodium Bicarbonate	0.2-0.4g of sodium bicarbonate per kg bodyweight 60-150 min before exercise	- Delays muscle fatigue	- High-intensity exercise <10 min (e.g. sprints)	Strong evidence	Strong evidence. Few safety concerns but gastrointestinal distress is well-established and very common  Split doses (smaller doses of same total intake) over 30-60 min and co-ingest carbohydrates to reduce GI distress
Beta-hydroxy beta-methylbutyrate (HMB)	3g of HMB <u>daily</u> , split into 3 equal doses (ideally with a meal), for at least 2 weeks and 6 weeks ideally	- Supports greater gains in lean body mass and muscular strength - May reduce muscle damage - May reduce DOMS (Delayed Onset Muscle Soreness)  <i>May be less effective in highly-trained athletes</i>	- Resistance training - High-intensity exercise	Some evidence  <i>May not be more effective than protein intake recommendations alone</i>	Strong evidence. Few safety concerns even in young and old populations

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Dietary Nitrate (e.g. Beetroot Juice, Pomegranate Juice)	5-9mmol (310-560mg) of dietary nitrate 2-3hr before exercise	<ul style="list-style-type: none"> <li>- Increases exercise time to exhaustion</li> <li>- Delays muscle fatigue</li> </ul> <p><i>May be less effective in highly-trained athletes</i></p>	<ul style="list-style-type: none"> <li>- Endurance Exercise &lt;40 min (e.g. time to fatigue, time trials)</li> <li>- High intensity, intermittent, short-duration efforts (e.g. team sports, repetitions to fatigue in resistance training)</li> </ul>	Some evidence	<p>Strong evidence</p> <p>Adverse effects could include: potential gastrointestinal distress</p>
Taurine	<p>1.5g of taurine 1-2 hours before exercise</p> <p>OR</p> <p>1-3g or taurine <u>daily</u> for 2 weeks or more</p>	<ul style="list-style-type: none"> <li>- Improves muscular endurance</li> <li>- Reduces muscle damage</li> <li>- Reduces DOMS (Delayed Onset Muscle Soreness)</li> </ul>	<ul style="list-style-type: none"> <li>- Resistance training</li> <li>- Endurance exercise (e.g. time to exhaustion)</li> </ul>	Some evidence	<p>Strong evidence.</p> <p>Well-studied and safe to consume, even when ingested regularly</p>

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L-Arginine	Ranges from 2-20g of arginine per day	<ul style="list-style-type: none"> <li>- Advertised as increasing blood flow to muscles</li> <li>- Advertised as improving recovery from exhaustion</li> </ul>	<ul style="list-style-type: none"> <li>- Power &amp; strength exercise</li> </ul>	<p><b>Limited evidence.</b> Little to no effect on either anaerobic or aerobic exercise</p>	<p><b>Limited evidence.</b> Few safety concerns of up to 9g per day for &lt;3 months</p> <p>Adverse effects could include: potential for gastrointestinal distress, nausea, reduced blood pressure</p>
Branched-Chain Amino Acids (BCAAs)  Leucine, Isoleucine, & Valine	0.22g of BCAAs per kg bodyweight per day	<ul style="list-style-type: none"> <li>- May delay muscle fatigue</li> <li>- May improve mental focus</li> <li>- May support gains in lean body mass and muscular strength</li> </ul>	<ul style="list-style-type: none"> <li>- Endurance exercise</li> <li>- Resistance training</li> </ul>	<p><b>Limited evidence</b></p> <p><i>May not be more effective than protein intake recommendations alone</i></p>	<p><b>Limited evidence.</b> Few safety concerns for up to 20g per day in divided doses</p> <p>Adverse effects could include:</p>

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Citrulline (L-Citrulline or Citrulline Malate)	8g of citrulline malate 1-2 hours before exercise	<ul style="list-style-type: none"> <li>- Increases blood flow</li> <li>- Reduces RPE (Rating of Perceived Exertion)</li> <li>- Reduces DOMS (Delayed Onset Muscle Soreness)</li> </ul>	- Power & strength exercise	Limited evidence	<p>Limited evidence. Few safety concerns for up to 9g in a day or 6g daily for up to 16 days</p> <p>Adverse effects could include: gastrointestinal distress</p>