

AIS SPORTS SUPPLEMENT FRAMEWORK

COLLAGEN GROUP B



As a group B supplement, this supplement should only be used under the close supervision of your sports dietitian

Collagen is the most abundant protein in the body, forming part of skin, bone, ligaments and tendons. It provides structure and support to allow these tissues to be strong, durable and pliable. Collagen is produced by the body, but as the body ages, production declines. Supplementation ensures collagen specific amino acids are available for collagen synthesis, and has recently been shown to shorten return to play time in connective tissue injuries involving tendon and ligaments. There is also some preliminary evidence for the use of collagen supplementation in injury prevention.



Most of the body's collagen is Type I - found in bone, muscle and connective tissue



Type I collagen is made up of non-essential amino acids (proteins), that the body can make, including glycine, proline, hydroxyproline and hydroxylysine



In supplement form collagen is hydrolysed through processing to remove its 'gelling' properties, so it can be easily mixed with water for consumption. It is available as a powder or pills

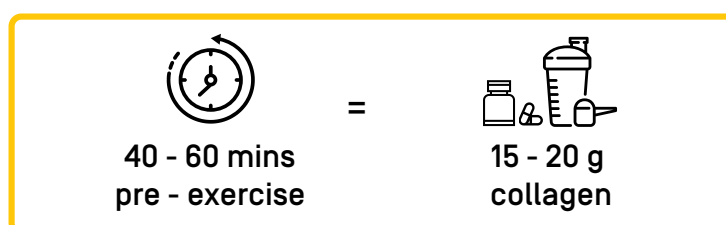


Collagen protein is animal derived (from pigs, beef and fish) and is not compliant with a vegetarian or vegan meal plan

BENEFITS OF COLLAGEN SUPPLEMENTATION

- ✓ Pain management for inflammatory conditions such as tendonitis (in conjunction with specific rehab exercises)
- ✓ Reduce activity-related joint pain
- ✓ Treatment/prevention of degenerative diseases, such as osteoarthritis
- ✓ Increase bone strength in order to reduce fracture risk
- ✓ Support collagen production during periods of increased turnover, particularly when the body is unable to keep up with demand and/or when total protein intake is sub-optimal, e.g. high training stimulus
- ✓ Support the repair of various tissues, including bone, skin and ligaments/ tendons during injury rehabilitation to assist return to play

HOW AND WHEN TO USE COLLAGEN SUPPLEMENTS




- > Powdered collagen supplements can be mixed easily with water, juice or added to smoothies. They are heat stable up to 300°C, so they can be added to tea, coffee, soups, stews and other recipes, including baked goods.
- > Tendons and ligaments have a poor blood supply, but exercise can 'switch on' their ability to uptake the necessary amino acids for recovery and repair. Amino acid concentration peaks in the bloodstream 40 - 60 minutes after collagen consumption, therefore supplements should be consumed 40 - 60 minutes prior to exercise or rehabilitation sessions to enhance the delivery of these amino acids to the targeted areas.
- > Vit. C is an important cofactor in collagen synthesis and some collagen supplements contain added Vit. C. It is unclear whether there is any additional benefit beyond the recommended dietary intake of Vit. C, which can be attained relatively easily through the diet ([see Vit. C infographic](#)).



COLLAGEN

FOOD FIRST PHILOSOPHY



- > Australian food databases do not contain information on the collagen content of food, therefore it is not possible to determine collagen intake through food sources.
- > Bone broth can be a rich source of collagen and may have other potential benefits, however research has indicated that the amino acid content is too variable and inconsistent to use as a therapeutic source of collagen for injury rehabilitation. Consumption of bone broth may also be impractical to consume 30 - 60 mins pre-exercise.
- > Collagen in the form of gelatine [e.g. McKenzies] is considered a food product, and thus would not be considered a risk from a doping perspective. 
- > Gelatine may be preferable to collagen supplements where access and/ or budget is a consideration, especially if made into palatable jellies. Care needs to be taken when using gelatine, as it thickens when mixed with liquid making it tricky to consume.

Collagen Jellies



You will need:

- > Silicone moulds/ ice-cube tray or greased baking tray
- > Mesh strainer
- > 80 g gelatine [4 heaped Tbsp]
- > 1 ½ cups 100% juice rich in Vit. C [e.g. orange, blackcurrant (Ribena), pomegranate or beetroot]

1. Pour 1/2 cup of the juice into a bowl. Sprinkle gelatine on top. Poke gently with end of a spoon just to make sure the gelatine is coated in juice. Allow to sit for 3-5 mins
2. Heat the remaining juice in a saucepan until warm, but not boiling. Add the gelatine, and stir gently until dissolved. Pour through a strainer (if any lumps) into silicone moulds or tray and refrigerate for 1-2 hours
3. Pop out of mould or cut into pieces. Divide 80 g by the number of pieces in your mould to calculate the amount of gelatine per piece. Aim for 15 - 20 g prior to exercise
4. Store in an airtight container in the fridge for 5 -7 days

Collagen Drink



You will need:

- > 200mL glass of pineapple juice [or mango/ papaya juice] (NB: the bromelain content stops the gelatine from setting and going sluggish)
 - > 3 tsp [15 g] of gelatine
1. Stir 3 tsp of gelatine into a glass of juice

CONCERNS & CONSIDERATIONS



More research is required for plant derived products claiming to mimic animal sources of collagen.



Other high biological value proteins like whey protein supplements may have a similar effect to collagen supplements on collagenous tissues.



Factors such as habitual intake of protein, digestion, training load and body mass may impact an individuals ability to increase collagen synthesis with supplement ingestion.



Supplementation may be beneficial for masters athletes due to a natural decline in collagen production with ageing.



Whether there is benefit beyond dietary sufficiency of Vit. C for collagen synthesis remains to be determined.



It is likely collagen supplementation assists in amplifying the stimulus provided by targeted exercises as part of an injury prevention and management protocol. Exercise remains key.



All supplements have a doping risk of some kind. Some supplements are riskier than others. Athletes should only use batch-tested supplements. The Sport Integrity Australia app provides a list of more than 400 batch-tested products. (www.sportintegrity.gov.au/what-we-do/supplements-sport).

While batch-tested products have the lowest risk of a product containing prohibited substances, they cannot offer you a guarantee. Before engaging in supplement use, you should refer to the specific supplement policies of your sport or institute and seek professional advice from an accredited sports dietitian (www.sportsdietitians.com.au). Athletes are reminded that they are responsible for all substances that enter their body under the 'strict liability' rules of the World Anti-Doping Code.

