



Collagen - Gelatin supplementation for dancers

Using gelatin to improve performance, prevent injury, and accelerate return to play

Common dance injuries are musculoskeletal

Musculoskeletal injuries, such as injuries to skeletal muscles, tendons, ligaments, bones and cartilage, are the most seen injuries in dancers. Optimal nutrition, doing specific exercises such as slow eccentric movements and heavy isometric holds, a balance between training and rest as well as wearing the right comfortable clothing and using quality equipment (type of dance floor and barre's) reduce the risk of these injuries.

Injuries to muscles, tendons, ligaments, bones and cartilage are often the result of weakness within the extracellular matrix (ECM). Each type of connective tissue in animals has a type of ECM. In bone for example, the ECM is comprised of collagen fibers and bone mineral. Strengthening the ECM has the potential to decrease sporting injuries.

The ECM has two main functions:

- 1) transmit forces quickly to maximize speed and performance; and
- 2) absorb energy from impact to prevent injury.

What is collagen?

Collagen is a structural protein that plays an important role in the firmness and elasticity of ECM. When the ECM gets damaged, for example due to "overloading" (literally during partnering or work overload), or through hard contacts (floorwork sessions), the body needs certain specific amino acids to restore and strengthen the collagen within these ECM. Three amino acids play a key part in the restoring process: proline, L-hydroxyproline and glycine. All three are important for the production of collagen and are highly present in gelatin.

What is gelatin?

A substance made from animal collagen, usually bones and cow or pig hides. It starts out as a pale colored, tasteless powder. It contains proteins and amino acids. It can make jiggly desserts (like those known as Jell-O). But this substance also is used in yogurt, soups, pies, candies and more. It can even be used as the basis of the clear capsules used to hold single-serving amounts of dry medicines.

How does supplementing gelatin prevent MT's injury in dancers?

In 2017 a study got published following the thought that as gelatin is an ingredient made from collagen and collagen being part of our bones and ligaments, it might eating gelatin and performing specific exercises could help strengthen those important MT's. The outcome of various studies on this subject show that:

- short loading protocols (5 and 40 loads) separated by >6 hours of rest were enough to maximize bone synthesis rates
- collagen synthesis in ligaments was maximized by short periods (5-10 minutes) of exercise separated by 6 hours of rest.
- These data suggest that, unlike muscle that continues to adapt as long as we exercise, our ECM only gets the signal to adapt for 5-10 minutes before the cells start shutting down. Everything after that is causing mechanical fatigue and damage without giving a further stimulus to adapt and get stronger.
- Adding gelatin to an intermittent exercise program improves collagen synthesis and could play a beneficial role in injury prevention and tissue repair.

How to use it? Suggested protocol:

- Ingest 15 g of gelatin in combination with 50 mg of vitamin C 1 hour before a 6 minute rope jumping session at least 6 hours before or after other training. So best to do for example 2 sessions on every free day you have and/or add add a session in the evening if work stops early.



Tips for getting 15g of gelatin:

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|--|----------------------|--------------------------|
| 1. D6 Collagen Peptan & Vit. C incl. | LINK | ±2 tbsp = 15g gelatin |
| 2. Vital Proteins collagen peptides & Vit. C incl. | LINK | ±2 tbsp = 15g gelatin |
| 3. Cartiplus | LINK | 1 ampul = 10g gelatin |
| 4. Gelatin sheets Dr. Oetker | supermarket | 12 sheets = ±20g gelatin |

Products 1-2 can be mixed with water for immediate use and 3 is ready to use as it is. 1-2 and 4 can be used in the recipes below. Best is to combine powder + sheets for your snacks - see recipe's below.

Tip for 50mg of vitamin C if you use plain gollagen powder or gelatin sheets

- 100ml fresh orange/lemon/lime juice
- 1/2 kiwi
- 200g mango
- Vit.C efferecence tablets [LINK](#) 1 tablet is already ±1000mg of vit.C (!)

RECIPES (20 gummies = 4 servings. Per serving 13,4g collagen and ±100kcal (2,7g collagen and 16kcal/gummy)

Use silicon molds for ice cubes or a square (glass) baking dish



Strawberry Kombucha Bites

Yields 20 gummies

- 1 cup low-sugar plain kombucha
- 6 tbsp gelatin powder (50g powder)
- 2 gelatin sheets
- 2 cups chopped strawberries
- 1 lemon, juiced
- 2 tbsp honey (adjust based on the sweetness of your kombucha)
- Pinch sea salt or losalt (mineral salt)

Directions:

Pour the kombucha into a wide bowl. Stir in the Gelatin, soak the gelatine sheets in cold water and leave it to bloom for 3-5 minutes.

Add the chopped strawberries, lemon juice, honey, and sea salt to a blender. Blend on high until smooth. Pour it out into a medium saucepan over medium low heat.

Cook until the strawberry mix is hot but not simmering. Turn the heat off and add the bloomed gelatin/kombucha to the saucepan. Also add the soft gelatin sheets (squeeze them before you add). Whisk until all the gelatin has dissolved.

Pour into silicone molds or a glass baking dish. Chill in the refrigerator until set up, about 1 hour. Enjoy immediately or keep in the fridge for up to 2 weeks.

Mango Oat Gummies

For ±20 bite-size collagen gummies

- 6 scoops gelatin powder (50g powder)
- 2 gelatin sheets
- ¾ cup oatly oat milk
- 3 cups fresh chopped mango (from about 2 large mangos)
- 1 orange, juiced
- 10 mint leaves
- 2 tbsp honey (optional, depending on the sweetness of your mango)
- Pinch of sea salt or losalt

Directions:

Stir the gelatin into the oat milk and soak the gelatine sheets in cold water. Set it aside to

bloom for ±5 minutes.

Add the chopped mango, orange juice, mint leaves, honey (if using), and sea salt to a blender. Blend on high for 1-2 minutes, or until it's very smooth.

Pour the mango puree out into a medium saucepan set over medium-low heat. Add the bloomed gelatin and soft gelatin sheets (squeeze them before you add) and stir continuously until the mixture is warmed and the gelatin is fully dissolved.

Portion the mixture between silicone molds or into one large glass baking dish. Refrigerate 30-60 minutes. Pop them out of the molds or remove from the baking dish and slice to your desired size. Store in a sealed container in the refrigerator for up to a week.



Creamy Coco Chocolate Gummies

Yields about 20 large gummies (3-4 servings)

- 6 scoops gelatin powder (50g powder)
- 2 gelatin sheets
- ½ cup cold water
- 2 cups canned coconut milk (skim)
- 1/4 cup raw cacao powder
- 40g dark chocolate
- 1 tsp vanilla extract
- Pinch of sea salt
- If you have: orange peel/cacao nibs

Directions:

In a small bowl, stir the Gelatin into the cold water, soak the gelatine sheets in another bowl of cold water.

Set it aside to let the gelatin bloom for 3-5 minutes.

Add the coconut cream, cacao powder, dark chocolate, vanilla extract, and sea salt to a medium saucepan. Place it over medium heat and stir briskly until the mixture is smooth.

Turn the heat to medium-low and add the bloomed gelatin, orange juice and soft gelatin sheets (squeeze them before you add). Continue whisking until the gelatin is dissolved.

Take your mold, sprinkle some orange peel and a few cacao nobs in it. Take the pan off of the heat and pour the mix into silicone molds or a glass baking dish.

Refrigerate the gummies until solid, about 1-2 hours for molds or 3+ hours for a glass dish.