

AISSPORTS SUPPLEMENT FRAMEWORK

GLYCEROL GROUP A



Glycerol is an odourless, liquid sugar alcohol that has a mild sweet taste with a syrup-like consistency. It has many uses; in food manufacturing it is used to thicken foods, control their moisture level or stabilise them, and in pharmaceuticals it is used to make soaps, toothpaste, cough syrups and lotions. In sports nutrition, it can be used with a substantial volume of fluid to increase the body's capacity to hold onto extra water [hyperhydration] for up to 4 hours. This can reduce unwanted performance decreases associated with dehydration.



Where to find it?

- > Available in supermarkets or pharmacies
- > Glycerol or glycerine/glycerin
- > Less than \$10 for 200mL



Safety

- > The description on the bottle can cause confusion
- > Listed for use to soften rough skin
- > Glycerol is safe to ingest as per instructions herein



Dietary Sources

- > Present in foods as a component of dietary fat
- > Derived from plants or animals
- > Safe for human consumption

BENEFITS OF GLYCEROL

Glycerol-induced hyperhydration (increased total body water) can help your capacity to tolerate fluid losses during exercise and offset or reduce the negative effects of dehydration. It may also help post-exercise with the effectiveness of rehydration.



DELAY, REDUCE OR PREVENT DEHYDRATION



REDUCE EFFECTS OF INCREASED CORE BODY TEMPERATURE & HEAT STRAIN



IMPROVE FLUID RETENTION FROM KIDNEYS



REDUCE URINARY FLUID LOSSES

WHEN TO CONSIDER ITS USE

Hyperhydration may help in a range of challenging situations that commonly arise in sport including when:

- ☑ It's not possible for fluid intake to get close to matching fluid losses during exercise
- ☑ Exercising in the heat when high fluid losses are expected (e.g. known heavy sweater)
- ☑ Access to fluid consumption during exercise is impractical or sports rules don't allow
- ☑ Multiple matches/events performed in close succession
- ☑ Fluid intake is postponed or avoided due to sport weight categories/time trials
- ☑ Voluntary fluid intake is reduced due to gut upset or reduced natural thirst drive
- ☑ Rapid rehydration is required late in the day while also avoiding sleep disruption
- ☑ Aggressive rehydration after strategic dehydration in weight-division sports

PRE-EXERCISE HYPERHYDRATION PLAN

Consume 90-180mins before exercise:



1 - 1.2g GLYCEROL per kg Body Mass

+



25mL FLUID per kg Body Mass

E.g. calculations for a 70kg athlete:

GLYCEROL: $1.1 \times 70 = 77g$

FLUID: $25 \times 70 = 1750mL$

Add 77g glycerol to 1750mL fluid =

approx. 3 x 600mL bottles of fluid +

25g of glycerol added to each

WHICH FLUID SHOULD YOU USE WITH GLYCEROL?

Consuming large volumes of water alone results in large urine outputs and poor fluid retention. Glycerol added to sodium containing fluid offers the best absorption.

Hyperhydration using WATER



5% absorbed

Hyperhydration using GLYCEROL



39% absorbed vs. water

Hyperhydration using SODIUM*



60% absorbed vs. water

Hyperhydration using GLYCEROL + SODIUM



77% absorbed vs. water

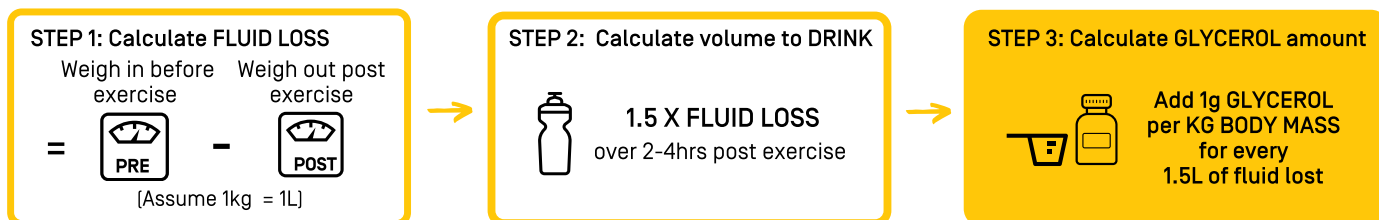
* The addition of 3g/L sodium (up to double the concentration of a standard electrolyte drink) may further enhance the benefits of glycerol for hyperhydration.



GLYCEROL

POST-EXERCISE REHYDRATION

Post exercise rehydration should aim to correct both fluid and electrolyte losses to enhance recovery ready for subsequent performance. When time permits, eating food together with fluid is usually adequate for complete rehydration. When time is limited or for larger fluid losses (over 2% body mass), glycerol may be considered.



E.g. Calculations for a 70kg athlete to drink during the 2-4hrs post exercise:


1. Fluid loss: $70\text{kg} - 68\text{kg} = 2\text{kg loss}$

2. Drink volume: $1.5 \times 2\text{kg} = 3\text{L}$

3. Glycerol: $1\text{g} \times 70\text{kg} = 70\text{g}$ (for every 1.5L)
= 140g for 3L

*Sodium containing fluids
(e.g. electrolyte drinks/ sports drinks
can enhance fluid absorption)

Add 140g of glycerol to 3L fluid =

 5 x 600mL bottles of fluid* with
28g glycerol added to each

CONCERNS & CONSIDERATIONS



Glycerol was previously banned by WADA for its potential to mask banned substances. In 2018, it was removed from the Prohibited List.



The gain in body mass associated with more fluid being retained may create a performance impairment. Weigh up benefit vs. risk.



Glycerol is usually well tolerated, but stomach upset, bloating, headaches, nausea or laxative effects have been reported.



Allow for peak urine output at approx. 60-80mins post glycerol intake to avoid interference in exercise preparation/ warm-up.



If you start exercise hydrated and can keep fluid loss < 2% of body mass, there is no advantage of pre-exercise hyperhydration.



Over and under drinking of fluids can be harmful. Seek professional advice from your sports dietitian.



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.