

EFFECTS OF FLUID RESTRICTION ON UPPER AND LOWER BODY STRENGTH AND HYDRATION STATUS IN AMATEUR RUGBY PLAYERS

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Background

- Maximum strength is negatively affected by hypohydration.
- Previous studies have used exercise heat stress or passive dehydration methods such as heat exposure to manipulate hydration status.
- Such methods induce elevations in muscle temperature that impair muscle contractile properties hence exacerbating the negative effects of dehydration on strength (Maughan, 2003).

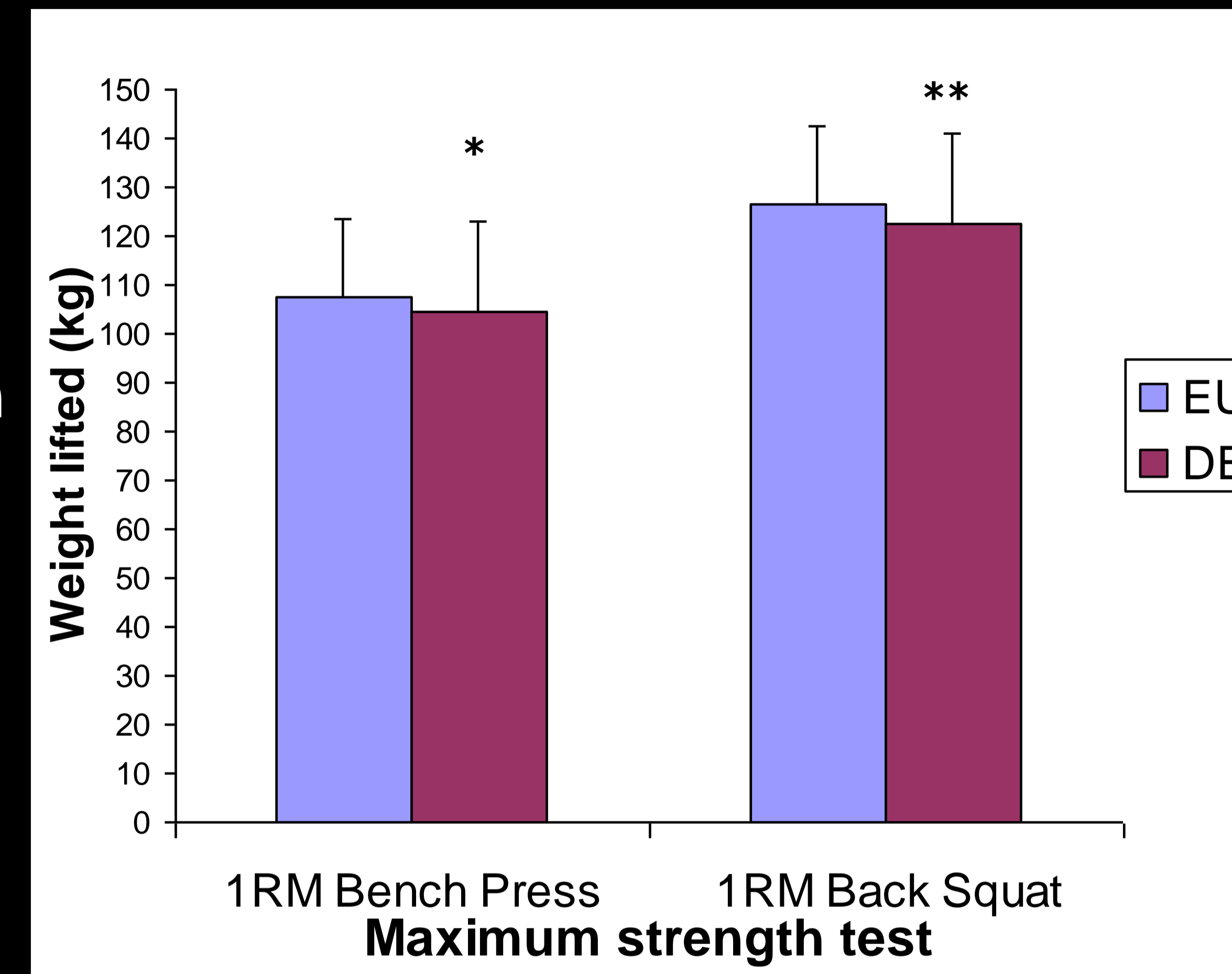
Purpose

- To assess the effects of 6 hrs of fluid deprivation on maximum strength.

Methods

- 10 male collegiate rugby players (mean \pm SD; age: 22 ± 2.7 years, body mass: 91.4 ± 8.5 kg, stature: 182.5 ± 12.5 cm)

Results



↓ 1RM bench press **2.91%** (P=0.009);
↓ 1RM back squat **3.34%** (P=0.004)
↑ Urine osmolality by **40.4%**
- EU: 407 ± 155.4 mOsmol/kgH₂O
- DE: 684 ± 244.6 mOsmol/kgH₂O (P=0.001)
↓ Body mass **2.04%**
- EU: 91.4 ± 8.05 kg
- DE: 89.6 ± 7.78 kg (P=0.17)

Discussion

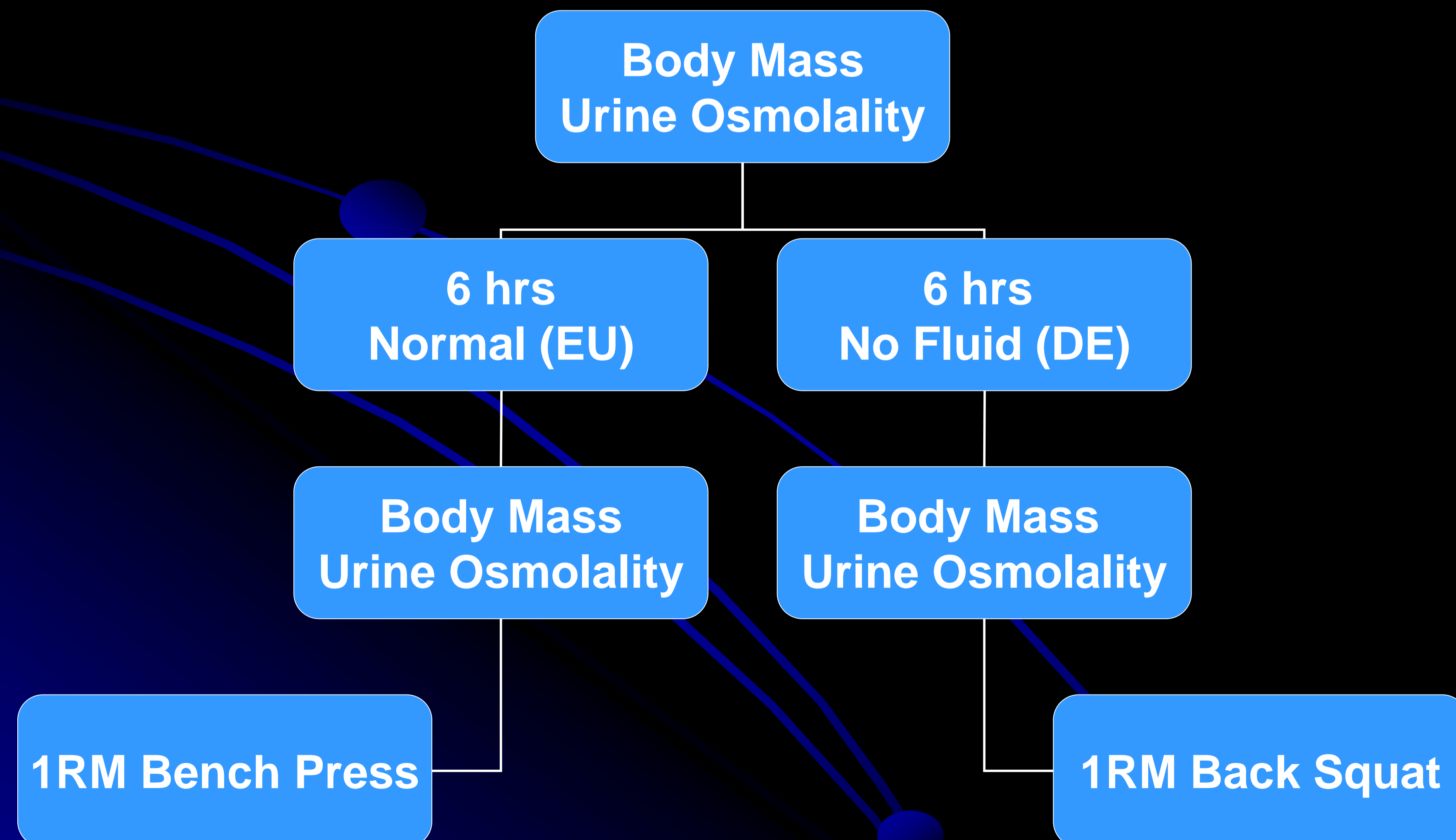
- Mild dehydration was experienced after 6 hrs of fluid restriction
- Negative effect on upper and lower body maximum strength.
- Findings agree with Judelson et al. (2007) who observed that ~3-4% hypohydration induced by either exercise heat stress or passive dehydration reduces muscular strength by ~2%.
- The reduction in body mass in his study is similar to that reported by Schoffstall et al. (2001) for passive dehydration.

Conclusion

- A relatively short time period of six hours fluid restriction can cause mild dehydration and impair maximum strength.

References

Judelson D., Maresh C., Anderson J. et al. (2007). Sports Med, 37, 907-921
Schoffstall E., Branch J., Leuholtz B., Swain D. (2001). J Strength Cond Res, 15, 102-108.
Maughan R. (2003). Eur J Clin Nutr, 57, S19-S23.



EU: 0-600 mOsmol/kgH₂O; Mild DE: 600-1000 mOsmol/kgH₂O; Severe DE: > 1000 mOsmol/kgH₂O