

## Abstract

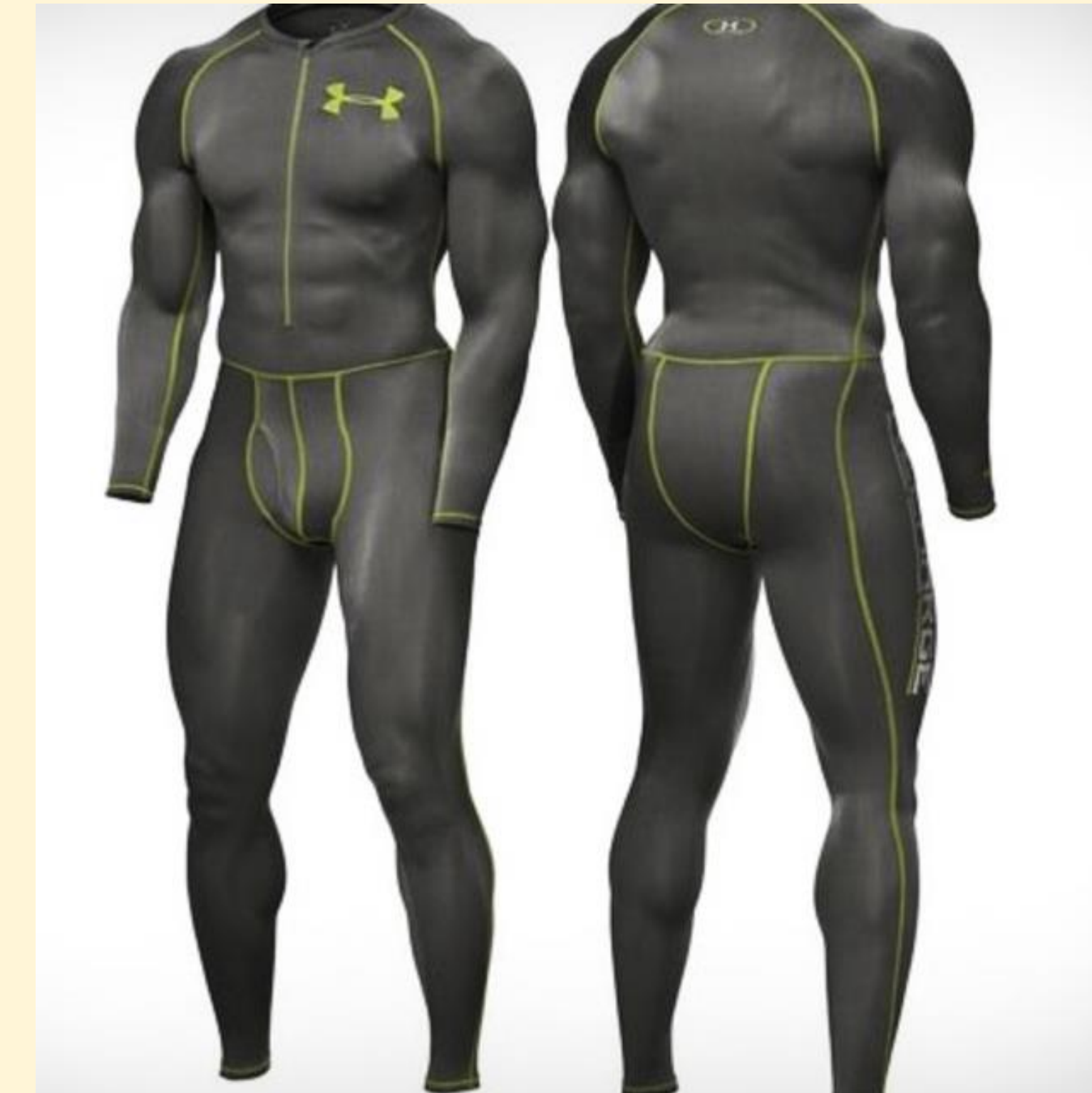
Athletic recovery, the process of restoring physiological and psychological processes of athletes to compete at a high level, commonly occurs on the ground. This research examines the need for recovery during air travel and the best methods for achieving the recovery process. Professional athletes receive millions of dollars to perform at their best. Small changes in athletic performance can be the difference between a loss and a championship or setting a new world record. Airline travel affects many different aspects of recovery and introduces new challenges for the body to overcome. As a review of existing literature indicates hypoxia, jet lag, deep vein thrombosis, and circadian rhythm disruption are just a few of the detrimental issues that athletes encounter during flight in between competitions. Depending on the length of the flight and nature of the sport, proposed recovery methods include compression garments, compression boots, massage, electronic stimulation, and a variety of nutritional and hydration options.



Sports and Aviation Logo

## Oxygen Saturation during flight

- Measured using a pulse oximeter
- Short flights are around 98% (<2hrs)
- Can get as low as 94% on long duration flights (>2hrs)
- Typical results on the ground are 99% to 100%



Under Armour Compression Suit

The big issue during flight is lower oxygen levels

Blood carries oxygen, so what if we increase blood flow, thus increasing oxygen saturation, using compression?

## How do we restore physiological processes?

- Increase oxygen – oxygen helps muscles recover
- Increase blood flow – blood carries oxygen
- Hydrate – water helps blood to flow
- Decrease inflammation – swelling reduces blood's ability to carry needed nutrients
- Rest – growth hormone is released during sleep to help rebuild and repair muscle
- Increase mobility – stretching, massage and foam rolling can loosen up muscles and increase blood flow
- Replenish glycogen and carbohydrates – help muscles recover and grow

## How can we overcome these issues?

- Compression → external pressure reduces intramuscular space available for swelling and promotes stable alignment of muscle fibers, reduces swelling force and soreness
- Proven reduction in DOMS (delayed onset muscle soreness) with compression



NormaTec boots

## Future Research in Flight

- Normatec boots
- Compression suits
- Massage

## For More Information