

Cannabis and Health

Module 14: Sports, Exercise, and Recovery

Lecture 2: Effects of Cannabis on Performance

Cannabis is banned in many sports

- The World Anti-Doping Agency (WADA) includes cannabis as a banned substance
 - Part of the reason is that it is thought to improve performance
 - However, in May 2013 WADA increased threshold for a positive test to 150 ng/ml to decrease chance athletes test positive for non-competition use
- Effect of cannabis on performance is complex and nuanced

Strength and Work Capacity

- A 1975 study by Steadward & Singh tested both work capacity (using cycle ergometry) and grip strength
- 20 male participants conducted assessments on 3 days:
 - Control (no cigarette), Placebo cigarette, Cannabis cigarette (latter 2 counterbalanced),

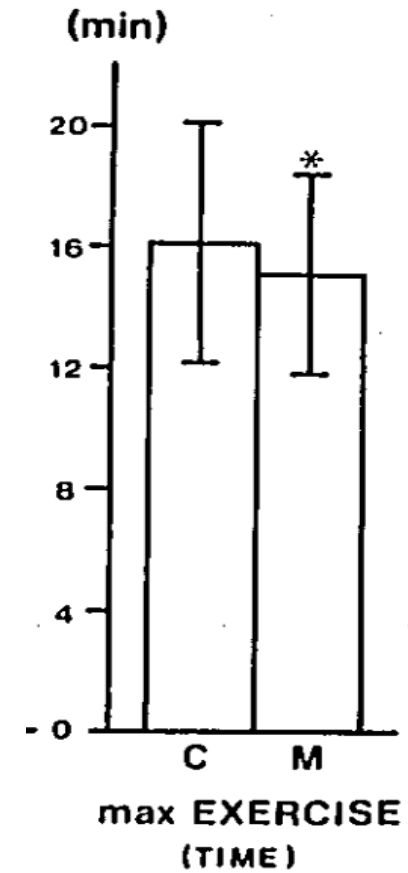


Strength and Work Capacity

- Results showed a significant effect of cannabis on work capacity
 - Peak work capacity was 1099.2kgm/min \pm 55.01 in the placebo condition and 829.9kgm/min \pm 50.26 in the THC condition ($p < 0.05$)
- Results showed no difference in grip strength
- No evidence for improvements in performance

Endurance

- Renaud & Cormier (1986) tested athlete's ability to cycle to exhaustion under two conditions:
 - 10 minutes after smoking 1.7% THC cigarette (M)
 - Without marijuana (C)
 - Found significant drop in time to exhaustion from ~16 minutes to ~15 minutes
- Again, no evidence of enhanced performance



Other measures of performance

- Renaud & Cormier (1986) also found that vasodilation and bronchodilation were increased with cannabis
- This suggests that cannabis has the potential to improve oxygenation to the tissues
- On many other measures of performance, there were no differences found in the marijuana versus control condition
- Results are thus complicated, but on balance do NOT suggest that cannabis enhances athletic performance

Athletic Performance

- Relatively few studies, but most find decreased performance or no difference
- Less than 40% of people in recent study who said they use cannabis during exercise said it helped performance (YorkWilliams et al., 2019)
- So why do we see headlines like this?

CANNABIS: THE SECRET TO ENHANCED
ATHLETIC PERFORMANCE AND RECOVERY

Depends on what you mean by performance

- Strength and speed (physiological) – evidence suggests there are not performance enhancing effects
- Anxiety – cannabis may decrease anxiety, and decreasing anxiety before or during a competition could be advantageous
- Sleep – anecdotal reports of athletes using cannabis before and between competitions to enhance sleep quality (Saugy et al., 2006; Bergamaschi & Crippa, 2013)

Sleep and relaxation

ELSEVIER

Addictive Behaviors 30 (2005) 1382–1391

Cannabis use to enhance sportive and non-sportive performances among French sport students

Fabrice Olivier Lorente^{a,1}, Patrick Peretti-Watel^{b,*}, Laurent Grelot^{a,2}

- Most common reason (endorsed by 36% of users) for cannabis use among students at six French sport universities was to “relax, to forget problems, to alleviate stress, to sleep better”
- Sleep quality is associated with better performance

Depends on what you mean by performance

- Training – use during long training sessions may assist with changes in estimation of time (decreasing boredom), decreased nausea and ability to consume nutrients
- Focus – some reports that cannabis allows increased focus during training and competition
- Neuroprotective effects (Ware et al., 2018)



Summary

- Despite being banned in most sports, actual effects of cannabis on performance are not clear
 - Notably, use is banned by WADA only DURING competition
- Need to be clear what aspect of performance is being discussed
 - Physiological?
 - Anxiety?
 - Sleep?
- Need to be clear about what cannabinoids, doses, and routes of administration are being tested
- Perhaps the best evidence is for aiding in recovery?