

## **Steroids linked to long-lasting heart disease risk and worse quality of life**

Anabolic steroids not only can cause serious side effects during use, such as heart failure and depression, but can continue being harmful years after stopping, according to two studies presented at the 25th European Congress of Endocrinology in Istanbul. These studies, supported by the Novo Nordisk Foundation, were carried out by researchers from the Copenhagen University Hospital Rigshospitalet who investigated the impact of anabolic steroids in former users.

Anabolic steroids – synthetic hormones that mimic the naturally-occurring sex hormone testosterone – are used to increase muscle mass and boost athletic performance. These performance-enhancing drugs have harmful side effects, for instance in men these include breast growth, hair loss, lower testosterone levels, erectile dysfunction, and an increased risk of heart disease, stroke, and liver or kidney failure. However, not much is known about the effects years after stopping their use.

In one study, the researchers examined 64 healthy men, between the ages of 18 and 50, who did recreational strength training in Denmark. Of these men, 28 were using anabolic steroids, 22 were former steroid users, and 14 had never used these steroids. The researchers assessed how much blood flowed to their heart muscle when resting and exercising, using a Positron Emission Tomography-Computed Tomography (PET-CT) scan with the radioactive tracer Rubidium-82, and found both former and current users had a poor blood flow to the heart.

The findings indicate that former steroid users are more likely to develop heart disease when compared to those who have never used them. “Previous studies have shown that the heart function almost normalises after anabolic steroids are discontinued, but our study suggests that former anabolic steroid users are at an increased risk of heart disease years after stopping as cardiac microcirculation – the blood flow through the smallest vessels in the circulatory system – seems persistently impaired,” said lead author Dr Yeliz Bulut. “The previous use of anabolic steroids could be a new risk factor for developing cardiovascular disease.”

In another study, Dr Bulut and colleagues collected questionnaires and blood samples to measure testosterone levels from three groups of men, aged 18-50 years: 89 current anabolic steroid users, 61 former steroid users, and 30 men who had never used steroids before. They found that former users of anabolic steroids report a worse quality of life on their physical and mental health, such as fatigue, social functioning and emotional well-being, despite stopping years earlier. Additionally, the same group had lower testosterone levels compared to those who had never used steroids.

Previous studies have shown that men experience withdrawal symptoms, such as depression and low motivation, and have lower levels of testosterone, immediately after they stop using steroids. “Our study adds to the growing body of literature that an impaired quality of life in previous anabolic steroid users seems to persist years following cessation and could be caused by both withdrawal and/or hypogonadal symptoms due to a sudden drop in testosterone levels in the blood,” said Dr Bulut. “Sadly, a reported worse quality of life could be a reason for former users to start reusing these steroids again.”

Both studies included a small number of anabolic steroid users, former users and non-users. Dr Bulut and her team now plan to recruit more men to the studies to assess both of these links with former

steroid abuse on a larger scale. "Our initial findings show that previous anabolic steroid users are likely to develop heart disease and have a decreased quality of life but we need to confirm these results with larger studies and investigate how the risk changes in relation to the years of usage and/ or cessation," said Dr Bulut. "Steroid side effects among former users seem to persist for a much longer period than we have known until now. We hope our results on these long-term health risks will prevent men from using anabolic androgenic-steroids."

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## Notes for Editors:

1. For press enquiries, or to arrange an interview with the study authors, please contact the ECE 2023 press office:

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2. The study **“PREVIOUS USE OF ANABOLIC ANDROGENIC STEROIDS IS ASSOCIATED WITH PERSISTENT IMPAIRED MYOCARDIAL MICROCIRCULATION”** will be presented at on Tuesday 16 May 2023 at the European Congress of Endocrinology at the Halic Congress Center in Istanbul, Turkey.
3. The poster **“DECREASED QUALITY OF LIFE IN PREVIOUS USERS OF ANABOLIC ANDROGENIC STEROIDS YEARS AFTER CESSATION”** will be presented on Saturday 13 May 2023 at the European Congress of Endocrinology at the Halic Congress Center in Istanbul, Turkey.
4. The 25th European Congress of Endocrinology (ECE) is held at the Halic Congress Center in Istanbul, Turkey, on 13-16 May 2023. See the full scientific programme [here](#).
5. The [European Society of Endocrinology](#) (ESE) provides a platform to develop and share leading research and best knowledge in endocrine science and medicine. By uniting and representing every part of the endocrine community, we are best placed to improve the lives of patients. With over 5,000 individual members and through the 51 National Societies involved with the ESE Council of Affiliated Societies (ECAS), ESE represents a community of over 20,000 European endocrinologists. We inform policy makers on health decisions at the highest level through advocacy efforts across Europe.