

# Lower risk of stress fractures in young adults with ADHD under chronic treatment with methylphenidate

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Abstract

## INTRODUCTION:

Methylphenidate (MP) use is highly prevalent among children and young adults. Previous basic and epidemiological research demonstrated an adverse effect of MP on bone mass. Studies in military recruits have shown that history of MP use before conscription was a risk factor for stress fractures (SF) during the service.

## METHODS:

This study is part of the project in which the association between MP use and incidence of SF was retrospectively investigated in a cohort of healthy conscripts aged 18-25, who served for at least 12 months between 2008 and 2017. Baseline information included sex, age, weight, height, geographic origin, socioeconomic status, and education. Subjects were divided into five groups: subjects without ADHD; untreated subjects with ADHD; and subjects with ADHD and prescriptions of 1-90, 91-180, or 181+ tablets during the study period. The primary outcome was at least one diagnosis of stress fracture during the study.

## RESULTS:

Among 682,110 subjects (409,175 men [60%]), 29,888 (4.4%) had fractures. MP was used by 1681 (0.4%) men and 2828 (1%) women. In both men and women, SF incidence was significantly higher among subjects with untreated ADHD (7.9% and 5.4%, respectively) and significantly lower in subjects with treated ADHD (1.9-3%; 0.3-4.3%), compared to healthy controls (5.3% and 2.9%). After multivariate adjustment, subjects with untreated ADHD remained at an increased risk of fracture (men OR = 1.66,  $p < 0.001$  and women OR = 1.33,  $p = 0.007$ ), whereas only subjects with highest exposure to MP (180+ tablets) had significantly lower chances for fracture (men OR = 0.49,  $p = 0.08$  and women OR = 0.09,  $p = 0.02$ ), compared to healthy controls.

## DISCUSSION:

The study has demonstrated lower risk of stress fractures with concurrent MP use. The findings in this population challenge our understanding of the MP effect on bone integrity and prompt further basic research.