

# Exercise induced anterolateral lower leg pathologies

Citation for published version (APA):

van Zantvoort, A. P. M. (2021). *Exercise induced anterolateral lower leg pathologies: Chronic exertional compartment syndrome and nerve entrapment*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20210707az>

## Document status and date:

Published: 01/01/2021

## DOI:

[10.26481/dis.20210707az](https://doi.org/10.26481/dis.20210707az)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

## VALORISATION

### Social and economic relevance

Even though exact numbers on exertional lower leg pain, with CECS and CPN pathologies in particular, are unknown, CECS prevalence is estimated at 27-33% in patients with exertional lower leg pain, and a large study in active duty military service members in the United States showed an overall incidence of 1:2000 persons per year.<sup>3, 6</sup> The real incidence in the overall population is probably higher since one can assume that a significant portion of people simply adapt their activity level in order to reduce symptoms and never seek medical attention. Altogether, it may seem that a large part of the general population is suffering from exertional lower leg pathology.

Many people depend on their mobility to make a living. In The Netherlands alone we have 40.000 military personnel, and over 9 million other men and women have active professions like sports instructors, farmers, gardeners, cleaners and catering staff (Infographic personeelsaantallen Defensie op 1 juli 2019, Central bureau of statistics (central bureau voor statistiek, CBS) opendata, second quarter 2020). Pain free mobility is not only important for daily work but also for sports activities. Sports is important for both mental and physical health. It can relieve stress and feelings of depression and anxiety, and sports membership was even found to be positively associated with happiness.<sup>1</sup> It has also been estimated that approximately 12% of all mortality in the United States is related to the lack of physical activity, and physical activity is inversely associated with the risk of more than ten types of cancer.<sup>4, 5</sup>

This thesis reports that CECS patients and patients with CPN pathologies not only experience complaints on exertion during sports activities, but also with normal daily activities. Moreover, patients even report symptoms at rest and at night. These often invalidating symptoms can lead to disability and job loss, reduction of physical activity and thus a drop in quality of life. This thesis aims to contribute to earlier recognition and treatment of these syndromes, in order to prevent a prolonged negative impact on people's life and to decrease the financial burden on society.

### Scientific relevance

Despite the growing number of publications on CECS in the last two decades from less than 10 a year to 176 in 2019 alone, there are still many aspects of CECS up for discussion. For instance, there is no consensus about the diagnostic role of intracompartmental pressure

measurements, the best treatment option, and even the exact pathophysiology is still not completely clarified.<sup>2</sup> This is not only the case for CECS but for exertional lower leg pain (ELP) syndromes in general. In the Netherlands, no national evidence-based guidelines are available on ELP syndromes. The availability of such a guideline would aid many physicians and patients by speeding up the diagnostic and therapeutic process. With this thesis we aimed to contribute to a broader scientific basis for the management of lower leg pain syndromes, in particular lat-CECS and common peroneal nerve pathologies. The NIAPS (Netwerk InspanningsAfhankelijke PijnSyndromen), a 2017 conceived Dutch multidisciplinary network for exercise related pain syndromes, endorses the importance of a general evidence-based guideline on ELP and is currently developing one for all Dutch healthcare workers treating patients with exertional lower leg symptoms.

## REFERENCES

1. Balish SM, Conacher D, Dithurbide L. Sport and Recreation Are Associated With Happiness Across Countries. *Res Q Exerc Sport*. 2016;87(4):382-388.
2. Blackman PG. A review of chronic exertional compartment syndrome in the lower leg. *Med Sci Sports Exerc*. 2000;32(3 Suppl):S4-10.
3. Clanton TO, Solcher BW. Chronic leg pain in the athlete. *Clin Sports Med*. 1994;13(4):743-759.
4. Kerr J, Anderson C, Lippman SM. Physical activity, sedentary behaviour, diet, and cancer: an update and emerging new evidence. *Lancet Oncol*. 2017;18(8):e457-e471.
5. Powell KE, Thompson PD, Caspersen CJ, et al. Physical activity and the incidence of coronary heart disease. *Annu Rev Public Health*. 1987;8:253-287.
6. Waterman BR, Laughlin M, Kilcoyne K, et al. Surgical treatment of chronic exertional compartment syndrome of the leg: failure rates and postoperative disability in an active patient population. *J Bone Joint Surg Am*. 2013;95(7):592-596.