# EVIDENCE BASED STATEMENT

DOMAIN 12, Statement 01

TOPIC: "Obesity, postural defects, physical inactivity impact on venous-lymphatic disease"

## SEARCH TERMS & SOURCES

((obesity) AND (risk factor)) AND ((venous) OR (lymphatic))
((weight bearing) AND (risk factor)) AND ((venous) OR (lymphatic))
((physical activity) AND (risk factor)) AND ((venous) OR (lymphatic))

## INCLUSION CRITERIA

- Lower limb only
- Systematic Reviews, Meta-Analysis, Reviews, RCT
- Publication < 10 years, only ENG

## SEARCH RESULT BEFORE - AFTER SELECTION

273/10 ; 3/2 ; 105/6

## PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH


1. Erdal ES, Demirgüç A, Kabalcı M, et al. Evaluation of physical activity level and exercise capacity in patients with varicose veins and chronic venous insufficiency. Phlebology. 2021 Sep;36(8):636-643.
2. Hall G, Laddu DR, Phillips SA, et al. A tale of two pandemics: How will COVID-19 and global trends in physical inactivity and sedentary behavior affect one another? Prog Cardiovasc Dis. 2021 Jan-Feb;64:108-110.
3. Espeit L, Rimaud D, Le Mat F, et al. Fatigue, physical activity and quality of life in people self-reporting symptoms of chronic venous disease. J Vasc Surg Venous Lymphat Disord. 2022 Jun 14:S2213-333X(22)00257-8.
4. Lerebourg L, L'Hermette M, Menez C, et al. The effects of shoe type on lower limb venous status during gait or exercise: A systematic review. PLoS One. 2020 Nov 25;15(11):e0239787
5. Deol ZK, Lakhanpal S, Franzon G, et al. Effect of obesity on chronic venous insufficiency treatment outcomes. J Vasc Surg Venous Lymphat Disord. 2020 Jul;8(4):617-628.e
6. Uhl JF, Gillot C. Anatomy of the foot venous pump: physiology and influence on chronic venous disease. Phlebology. 2012 Aug;27(5):219-30.
7. Uhl JF, Chahim M, Allaert FA. Static foot disorders: a major risk factor for chronic venous disease? Phlebology. 2012 Feb;27(1):13-8.
8. Willenberg T, Schumacher A, Amann-Vesti B, et al. Impact of obesity on venous hemodynamics of the lower limbs. J Vasc Surg. 2010 Sep;52(3):664-8

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## Domain 12; Statement 1

### IDENTIFIED REFERENCES


1. Lee Y, Zawieja SD, Muthuchamy M. Lymphatic Collecting Vessel: New Perspectives on Mechanisms of Contractile Regulation and Potential Lymphatic Contractile Pathways to Target in Obesity and Metabolic Diseases. Front Pharmacol. 2022 Mar 9;13:848088.
2. Antoniak K, Hansdorfer-Korzon R, Mrugacz M, et al. Adipose Tissue and Biological Factors. Possible Link between Lymphatic System Dysfunction and Obesity. Metabolites. 2021 Sep 11;11(9):617.
3. Harrison SL, Buckley BJR, Rivera-Caravaca JM, et al. Cardiovascular risk factors, cardiovascular disease, and COVID-19: an umbrella review of systematic reviews. Eur Heart J Qual Care Clin Outcomes. 2021 Jul 21;7(4):330-339.
4. Danin-Mankowitz H, Ugarph-Morawski A, Braunschweig F, et al. The risk of venous thromboembolism and physical activity level, especially high level: a systematic review. J Thromb Thrombolysis. 2021 Aug;52(2):508-516.
5. Tsoupras A, Lordan R, Zabetakis I. Thrombosis and COVID-19: The Potential Role of Nutrition. Front Nutr. 2020 Sep 25;7:583080.
6. Kunutsor SK, Mäkikallio TH, Seidu S, et al. Physical activity and risk of venous thromboembolism: systematic review and meta-analysis of prospective cohort studies. Eur J Epidemiol. 2020 May;35(5):431-442.
7. Seidu S, Gillies C, Zaccardi F, et al. The impact of obesity on severe disease and mortality in people with SARS-CoV-2: A systematic review and meta-analysis. Endocrinol Diabetes Metab. 2020 Aug 14;4(1):e00176.
8. Rahmani J, Haghighian Roudsari A, Bawadi H, et al. Relationship between body mass index, risk of venous thromboembolism and pulmonary embolism: A systematic review and dose-response meta-analysis of cohort studies among four million participants. Thromb Res. 2020 Aug;192:64-72.
9. Meulendijks AM, Franssen WMA, Schoonhoven L, et al. A scoping review on Chronic Venous Disease and the development of a Venous Leg Ulcer: The role of obesity and mobility. J Tissue Viability. 2020 Aug;29(3):190-196.
10. Taylor BA, Parducci PM, Zaleski AL, et al. Venous thromboemboli associated with acute aerobic exercise: A review of case report commonalities. Scand J Med Sci Sports. 2019 Nov;29(11):1749-1754.
11. Haldane CE, Ekhtiari S, de Sa D, Simunovic N, et al. Venous Thromboembolism Events After Hip Arthroscopy: A Systematic Review. Arthroscopy. 2018 Jan;34(1):321-330.e1.
12. Zadow EK, Adams MJ, Kitic CM, et al. Acquired and Genetic Thrombotic Risk Factors in the Athlete. Semin Thromb Hemost. 2018 Nov;44(8):723-733.
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14. Escobedo N, Oliver G. The Lymphatic Vasculature: Its Role in Adipose Metabolism and Obesity. Cell Metab. 2017 Oct 3;26(4):598-609.
15. Davies HO, Popplewell M, Singhal R, et al. Obesity and lower limb venous disease - The epidemic of phlebesity. Phlebology. 2017 May;32(4):227-233.
16. Vollans S, Chaturvedi A, Sivasankaran K, et al. Symptomatic venous thromboembolism following circular frame treatment for tibial fractures. Injury. 2015;46(6):1108-11.
17. Braekkan SK, Siegerink B, Lijfering WM, et al. Role of obesity in the etiology of deep vein thrombosis and pulmonary embolism: current epidemiological insights. Semin Thromb Hemost. 2013 Jul;39(5):533-40.
18. Grabowski G, Whiteside WK, Kanwisher M. Venous thrombosis in athletes. J Am Acad Orthop Surg. 2013 Feb;21(2):108-17.

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## Domain 12; Statement 1

TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 12, Statement 01, TOPIC: "Obesity, postural defects, physical inactivity impact on venous-lymphatic disease"

Obesity might impact venous and lymphatic lower limb drainage to have led to the term "Phlebesity". Considering venous disorders affect potentially more than half of the population and obesity more than one quarter of it, the proper management of the condition is of paramount importance. A 2017 review demonstrated how obesity is an important risk factor for venous disease, and how obese patients affected by venous disease are more likely to be symptomatic.

Moreover, obesity per se can represent a direct cause of venous hypertension.

**[Willenberg T, Schumacher A, Amann-Vesti B, et al. Impact of obesity on venous hemodynamics of the lower limbs. J Vasc Surg. 2010 Sep;52(3):664-8]**

Unfortunately, many investigations are including obesity in the exclusion criteria for enrollment, therefore important data on the topic are still missing and should be encouraged in their collection.

**[Davies HO, Popplewell M, Singhal R, et al. Obesity and lower limb venous disease - The epidemic of phlebesity. Phlebology. 2017 May;32(4):227-233].**

The way the weight is delivered on the feet is important as well in venous return pathophysiology. Indeed, a static foot disorder has been identified as a risk factor for chronic venous disease and vein-lymphatic experts are requested to assess also this aspect in their patient evaluation.

**[Uhl JF, Chahim M, Allaert FA. Static foot disorders: a major risk factor for chronic venous disease? Phlebology. 2012 Feb;27(1):13-8].**

Activation of the lower limb muscular pump is of great importance as well. Perceived exertion, and quality of life is positively impacted by physical activity in venous disease patients. Yet, properly standardized and reproducibile exercise protocols are still missing.

**[Espeit L, Rimaud D, Le Mat F, et al. Fatigue, physical activity and quality of life in people self-reporting symptoms of chronic venous disease. J Vasc Surg Venous Lymphat Disord. 2022 Jun 14:S2213-333X(22)00257-8].**

The importance of standardized exercise is seen also in the opposite effect of physical activity as a potential thrombo-embolic risk factor.

**[Danin-Mankowitz H, Ugarph-Morawski A, Braunschweig F, et al. The risk of venous thromboembolism and physical activity level, especially high level: a systematic review. J Thromb Thrombolysis. 2021 Aug;52(2):508-516].**

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### STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 12, Statement 01

"**Obesity, postural defects, physical inactivity are risk factors for leg chronic venous disease**."

### SELECTED REFEREENCES


1. **Willenberg T, Schumacher A, Amann-Vesti B, et al. Impact of obesity on venous hemodynamics of the lower limbs. J Vasc Surg. 2010 Sep;52(3):664-8**
2. **Davies HO, Popplewell M, Singhal R, et al. Obesity and lower limb venous disease - The epidemic of phlebesity. Phlebology. 2017 May;32(4):227-233**
3. **Uhl JF, Chahim M, Allaert FA. Static foot disorders: a major risk factor for chronic venous disease? Phlebology. 2012 Feb;27(1):13-8**
4. **Espeit L, Rimaud D, Le Mat F, et al. Fatigue, physical activity and quality of life in people self-reporting symptoms of chronic venous disease. J Vasc Surg Venous Lymphat Disord. 2022 Jun 14:S2213-333X(22)00257-8**
5. **Danin-Mankowitz H, Ugarph-Morawski A, Braunschweig F, et al. The risk of venous thromboembolism and physical activity level, especially high level: a systematic review. J Thromb Thrombolysis. 2021 Aug;52(2):508-516**


### identified LITERATURE BIAS

Exclusion of obese patients from many venous-lymphatic investigations.
Not inclusion of static foot disorder as bias.
Lack of standardization in physical activity.

### SUGGESTED NEXT LINES OF RESEARCH

Investigations taking into consideration the above mentioned bias.