

# Chronic fatigue syndrome and its relation with absenteeism: Elastic-net and stepwise applied to biochemical and anthropometric clinical measurements \*

Anderson C. Neisse <sup>1</sup>, Fernando L. P. Oliveira <sup>2</sup>, Anderson C. S. Oliveira <sup>3</sup>, Frederico R. B. Cruz <sup>4</sup>, and Raimundo M. Nascimento Neto <sup>2</sup>

<sup>1</sup>*Universidade Federal de Viçosa  
35690-000 - Viçosa - MG, Brazil*

<sup>2</sup>*Universidade Federal de Ouro Preto  
35400-000 - Ouro Preto - SP, Brazil*

<sup>3</sup>*Universidade Federal de Mato Grosso  
78060-900 - Cuiabá - SP, Brazil*

<sup>4</sup>*Universidade Federal de Minas Gerais  
31270-901 - Belo Horizonte - SP, Brazil*

Corresponding author: Anderson C. Neisse, e-mail: [a.neisse@gmail.com](mailto:a.neisse@gmail.com)

## Abstract

Characterized by persistent fatigue, pain, cognitive impairment and sleep difficulties, chronic fatigue syndrome (CFS) has been common in clinical practice. Studies indicate multiple factors contributing to CFS development: poor sleep, dehydration, psychological stress, hormonal dysfunction, nutrient deficiencies, among others. In risk work conditions, like the shift work of mines, CFS significantly increases the chance of fatal accidents. Work environments of mines suggest the presence of factors that increase the risk of developing CFS. Considering the severity/implications of CFS's symptoms on the social and professional lives as well as on the economy, efforts are targeting its characterization and prevention. This study aims to assess the risk of CFS by studying cross-sectional data on absenteeism of 621 shift workers, measuring 8 anthropometric and 11 biochemical variables as well as age and gender, amounting 21 variables. After imputation, logistic regression was fitted by stepwise selection, lasso and elastic-net regularization. Results suggest that the models do not discriminate very well due to noise inherent to the dependent variable. However, all models agree on the effects of sodium and total cholesterol on the risk of absenteeism. The Stepwise model also indicates LDL and triglycerides as significant factors, both lasso and elastic-net show effects for LDL instead. The elastic-net model suggests an effect of potassium, though inconclusive according to the literature. **Keywords:** Absenteeism, biometrics, bootstrap, chronic fatigue syndrome; elastic-net.

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