

INPLASY PROTOCOL

To cite: Valente et al. Cartilage Oligomeric Matrix Protein (COMP), a potential cartilage destruction biomarker in active and healthy individuals or athletes from different sports. A systematic review. Inplasy protocol 202120032. doi: 10.37766/inplasy2021.2.0032

Received: 08 February 2021

Published: 08 February 2021

Corresponding author:
Pedro Valente

pedrovalente505@gmail.com

Author Affiliation:
University of Coimbra -
Faculty of Sports

Support: There was no financial support.

Review Stage at time of this submission: Data analysis.

Conflicts of interest:
None declared.

INTRODUCTION

Review question / Objective: This review aimed to conclude if exist a similar COMP response to exercise (chronic or an acute session) in athletes or active individuals from different sports and if this concentration is associated with some parameters of cartilage damage.

Cartilage Oligomeric Matrix Protein (COMP), a potential cartilage destruction biomarker in active and healthy individuals or athletes from different sports. A systematic review

Valente, PA¹; Rama, L²; Sarmento, H³; Teixeira, A⁴.

Review question / Objective: This review aimed to conclude if exist a similar COMP response to exercise (chronic or an acute session) in athletes or active individuals from different sports and if this concentration is associated with some parameters of cartilage damage.

Condition being studied: How COMP respond directly to an exercise session in athletes or active and healthy individuals (acute response) and how these values can be modified chronically during the years (chronic response).

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 February 2021 and was last updated on 08 February 2021 (registration number INPLASY202120032).

Rationale: Cartilage Oligomeric Matrix Protein has been considered a potential predictor for joints' destruction in some cartilage diseases, such as osteoarthritis or rheumatoid arthritis. The practice of regular exercise is positively correlated with some physiological benefits. Nevertheless, it is not clear yet how the biomechanical or the biochemical system are affected. Still, the exercise practice during a long time is a point of concern

nearby the scientific community, especially, when these movements are constantly made with a lot of intensity, impact or weight. As much as we understand, does not exist any review that associates both pillars. This knowledge can be crucial for the development of new strategies not only during the training sessions but also during the diagnosis of these pathologies.

Condition being studied: How COMP respond directly to an exercise session in athletes or active and healthy individuals (acute response) and how these values can be modified chronically during the years (chronic response).

METHODS

Search strategy: This systematic review was performed following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. Two independent researchers analysed on January 19th, 2021 with the support of a third independent and experienced researcher, Four different databases were selected, such as 'Web of Science' (all databases); 'PubMed'; 'Scopus' and 'Sport Discus'. The search combination used to obtain all the relevant articles from January 1st, 2015 to December 31st, 2020 were, 'exercise' or 'sport' or 'athlete' or 'performance' and 'comp' or 'sCOMP' or 'oligomeric matrix protein' and 'inflamm'.

Participant or population: Professional or recreational athletes and also healthy and active individuals.

Intervention: The regular practice of exercise.

Comparator: The regular practice of exercise with healthy controls or even different types of sports.

Study designs to be included: Were uniquely included original studies that analysed the acute or the chronic response to exercise.

Eligibility criteria: Two researchers defined the inclusion and exclusion criteria before

the beginning of the search, supported in the PICO model (population, intervention, comparison, and outcomes). The inclusion criteria were: (1) original papers in English, from 2015 to 2020, included; (2) studies made with active and healthy humans; (3) young-adults or adults between 18 and 60 years old; (4) no chronic or acute diseases reported before or during the blood collection; (5) studies that analysed the COMP concentration. On the other half, the exclusion criteria defined were: (1) all the studies that are not originals; (2) all the studies that were published before 2015 or after 2020; (3) all the studies that involved children above 18 or adults older than 60 years old; (5) any study made with animals or ex-vivo cells; (6) studies that measured a nutritional variable as an outcome were also rejected. Two reviewers (PV, LR) independently screened titles and abstracts to identify articles following the inclusion and exclusion criteria established before. For those articles, full-text versions were retrieved and independently screened by two reviewers to determine whether they met the inclusion criteria. Disagreements were resolved through discussion with the help of other authors. The result was obtained through a generalised consensus between the whole researching team.

Information sources: Four different databases were selected, such as 'Web of Science' (all databases); 'PubMed'; 'Scopus' and 'Sport Discus'. The search combination used to obtain all the relevant articles from January 1st, 2015 to December 31st, 2020 were, 'exercise' or 'sport' or 'athlete' or 'performance' and 'comp' or 'sCOMP' or 'oligomeric matrix protein' and 'inflamm'.

Main outcome(s): Identification of the differences in the COMP response in athletes, non-athletes, healthy active individuals or healthy sedentary individuals. Differences in the COMP response in different sports.

Data management: To manage the data was used EndNote X9 and also a shared spreadsheet with the whole team.

Quality assessment / Risk of bias analysis:

To standardise the result of each study, the average percentage was calculated for each case. All articles were classified as (1) low methodological quality, with a score under 50%; (2) good methodological quality, with a score between 51% and 75%, and (3) excellent methodological quality, with a score under 75%.

Strategy of data synthesis: The data was divided into acute response to exercise (this means, before and after a short period of a specific induced session) or chronic response (resting and basal level).

Subgroup analysis: The data was also divided between athletes or healthy and active individuals.

Sensitivity analysis: No analysis to report.

Language: English.

Country(ies) involved: Portugal.

Keywords: COMP, cartilage, exercise, destruction, athletes.

Contributions of each author:

Author 1 - Pedro Valente - The author made the data search, helped with the methodological analysis and with the qualitative criteria, provided feedback and wrote the manuscript.

Email: pedrovalente505@gmail.com

Author 2 - Luis Rama - The author made the data search, made with the qualitative criteria, provided feedback and approved the final manuscript.

Email: luisrama@fcdef.uc.pt

Author 3 - Hugo Sarmento - The author made the data search, helped with the methodological analysis and with the qualitative criteria, provided feedback and approved the final manuscript.

Email: hugo.sarmiento@uc.pt

Author 4 - Ana Teixeira - The author provided feedback and approved the final manuscript.

Email: ateixeira@fcdef.uc.pt