INPLASY PROTOCOL

Corresponding author:
João Gustavo Claudino

claudinojgo@usp.br

Author Affiliation:
University of São Paulo.

Exploratory systematic review of Mixed Martial Arts: an overview of performance of importance factors with over 20,000 athletes

Bueno, JCA[1]; Faro, HKC[2]; Lenetsky, S[3]; Gonçalves, AF[4]; Dias, SBCD[5]; Ribeiro, ALB[6]; Silva, BVC[7]; Cardoso Filho, CA[8]; de Vasconcelos, BM[9]; Serrão, JC[10]; Andrade, A[11]; de Souza-Junior, TP[12]; Claudino, JG[13].

Review question / Objective: The objective of the present study was to analyze the findings of the scientific literature related to MMA through an exploratory systematic review on the subject and to present the state of the art of the sport from a multifactorial perspective.

Condition being studied: Mixed Martial Arts (MMA) is a full contact combat sport characterized by its high degree of freedom in offensive and defensive approaches resulting in the inclusion of techniques and tactics from multiple combat sport styles. MMA has gained legitimacy and uniformity of rule sets after a tumultuous and unregulated introduction in North America as well as it is one of the fastest growing sports in the world. However, to the best of our knowledge, there are still no methodical, comprehensive, transparent, and replicable studies that have summarized the overall perspective of MMA athletes, resulting in an integrated analysis for a better scientific understanding and more efficient practical applications.

INTRODUCTION

Review question / Objective: The objective of the present study was to analyze the findings of the scientific literature related to MMA through an exploratory systematic review on the subject and to present the state of the art of the sport from a multifactorial perspective.

Condition being studied: Mixed Martial Arts (MMA) is a full contact combat sport characterized by its high degree of freedom in offensive and defensive approaches resulting in the inclusion of techniques and tactics from multiple combat sport styles. MMA has gained legitimacy and uniformity of rule sets after a tumultuous and unregulated introduction in North America as well as it is one of the fastest growing sports in the world. However, to the best of our knowledge, there are still no methodical, comprehensive, transparent, and replicable studies that have summarized the overall perspective of MMA athletes, resulting in an integrated analysis for a better scientific understanding and more efficient practical applications.

METHODS

Search strategy: The command line "Mixed Martial Arts" or "Combat Sport" was used during the search in the three electronic databases (PubMed, Scopus and Web of Science).

Participant or population: Healthy, MMA athletes of any age, sex and level.

Intervention: Exposure to the MMA training and/or competition.

Comparator: Control groups are acceptable, but not mandatory.

Study designs to be included: Study design with data reported from the MMA athletes.

Eligibility criteria: 1) the study was written in English; 2) the study was published as original research in a peer-reviewed journal as a full text article; 3) data were reported for the MMA athletes; and 4) the participants were competitive athletes (defined as regional, national and international).

Information sources: 1) PubMed 2) Scopus 3) Web of Science.

Main outcome(s): Data reported from the MMA athletes.

Quality assessment / Risk of bias analysis: The quality of all studies was evaluated by three authors (SL, CACF and AB) using evaluation criteria (Table S1: Risk of bias assessment criteria) based on the study by Saw et al. [1], which has been used in previous systematic reviews [2,3]. Scores were allocated based on how well each criterion was met, assuming a maximum possible score of 8 (low risk of bias). Studies with a risk of bias score of 4 or less were considered poor and were excluded. Risk of bias was assessed independently of study appraisal using the GRADE guidelines [4]. This takes into account randomization, concealment of allocation, blinding of outcomes assessment, incomplete outcome data, selective reporting, and other biases, such as stopping early for benefit or the use of non-validated outcome measures.

Strategy of data synthesis: Based on the title, main objective of the study and according to the main findings of each study, categories were created for analysis. When necessary, the first and last author (JCA and JGC) entered into an agreement to decide if one study could be added in more than one category. For example: study title = "Repeat Effort Performance is Reduced 24 Hours After Acute Dehydration in Mixed Martial Arts Athletes" and study purpose = "This study sought to determine the influence of acute dehydration on physical performance and physiology in mixed martial arts." Thus, the referred study could be added in the "weight loss" and "physical fitness and performance" categories. However, because the main findings found (i.e., "Acute dehydration of 4.8% body mass results in reduced physical performance 3 and 24 hours after a dehydration protocol"), this study was added just in the "weight loss" category.

Subgroup analysis: N/A.

Sensitivity analysis: N/A.

Language: The study was written in English.

Country(ies) involved: Brazil, New Zealand, Canada, USA.

Other relevant information: Initially, we did not the registration because this information in the PROSPERO website "PROSPERO does not accept: Systematic reviews assessing sports performance as an outcome" that was the only option so far. However, the Journal sent to us an e-mail: "Regarding the paper status, the final decision gave by the Academic Editor has been made. We will accept this paper once we get your feedback regarding the Registration Statement." Therefore, we looked for other options and the INPLASY was found now. The INPLASY in addition to accepting reviews assessing sports performance as an outcome, it also addresses the situation of "Completed but not published" if "the authors explain the reasons that prevented prospective registration".

Keywords: MMA, injuries, weight loss, technical and tactical analysis, psychobiological.

Dissemination plans: Publication: Sports (ISSN: 2075-4663).

Contributions of each author:
Author 1 - João Bueno - conceptualization; writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: contato.edufisica@hotmail.com
Author 2 - Heloiana Faro - writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: heloianafaro@gmail.com
Author 3 - Seth Lenetsky - writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: lenetsky@gmail.com
Author 4 - Aleksandro Gonçalves - writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: aleksandrofg@gmail.com
Author 5 - Stefane Dias - writing - preparation of original draft; writing — proofreading and editing.
Email: sdias@keiseruniversity.edu
Author 6 - André Ribeiro - writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: alberzotiribeiro@gmail.com
Author 7 - Bruno Victor Corrêa Silva - writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: brunobjjbh@gmail.com
Author 8 - Carlos Alberto Cardoso Filho - writing - preparation of original draft; data curation; writing — proofreading and editing.
Email: carlos.filho@alumni.usp.br
Author 9 - Bruna Vasconcelos - writing - preparation of original draft; writing — proofreading and editing.
Email: brunamavgnier@hotmail.com
Author 10 - Julio Serrão - writing - preparation of original draft; writing — proofreading and editing.
Email: jcserrao@usp.br
Author 11 - Alexandro Andrade - writing - preparation of original draft; writing — proofreading and editing.
Email: d2aa@hotmail.com
Author 12 - Tácito Souza-Junior - writing - preparation of original draft; writing — proofreading and editing.
Email: tacitojr2009@hotmail.com
Author 13 - João Gustavo Claudino - conceptualization; writing - preparation of original draft; data curation; writing — proofreading and editing; general supervision.
Email: claudinojgo@usp.br

References:
1. Saw AE, Main LC, Gastin PB. Monitoring the athlete training response: subjective self-reported measures trump commonly used objective measures: a systematic review. Br J Sports Med [Internet]. 2016;50:281–91. Available from: https://bjsm.bmj.com/lookup/doi/10.1136/bjsports-2015-094758
2. Claudino JG, Cardoso Filho CA, Bittencourt NFN, Gonçalves LG, Couto CR, Quintão RC, et al. Eccentric Strength Assessment of Hamstring Muscles with New Technologies: a Systematic Review of Current Methods and Clinical Implications. Sport Med - Open [Internet]. SpringerOpen; 2021;7:10. Available from: https://

sportsmedicine-open.springeropen.com/articles/10.1186/s40798-021-00298-7

3. Claudino JG, Capanema D de O, de Souza TV, Serrão JC, Machado Pereira AC, Nassis GP. Current Approaches to the Use of Artificial Intelligence for Injury Risk Assessment and Performance Prediction in Team Sports: a Systematic Review. Sport Med - Open [Internet]. Springer; 2019;5:28. Available from: https://sportsmedicine-open.springeropen.com/articles/10.1186/s40798-019-0202-3

4. Kim SY, Park JE, Lee YJ, Seo H-J, Sheen S-S, Hahn S, et al. Testing a tool for assessing the risk of bias for nonrandomized studies showed moderate reliability and promising validity. J Clin Epidemiol [Internet]. Elsevier Inc; 2013;66:408–14. Available from: http://dx.doi.org/10.1016/j.jclinepi.2012.09.016