

## REVIEW

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## Physical Conditioning for Combat Sports: book review

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### Abstract

The present work analyses the book titled “Physical Conditioning for Combat Sports”, edited by Dr Emerson Franchini and Dr Tomas Herrera-Valenzuela in 2017. The book is divided in six chapters and eight authors are participating. The first chapter, “Development of the Aerobic Capacity in Fighters”, analyses the current literature in specific training and competition situations. The second chapter, “Development of the Anaerobic Capacity in Fighters”, describes the responses and needs of fighters in relation to anaerobic power and capacity. The third chapter, “Maximal Strength Training in Fighters”, studies the different training methods for the specific development of this capacity. The fourth chapter, “Development of the Muscular Power in Fighters”, details the needs of muscular power according to the different combat sports and during training and competition situations. The fifth chapter titled “Development of the Strength Endurance in Fighters” describes the general and specific tests for fighters, including suggestions for training core muscles as well as higher and lower extremities. The sixth chapter, “Flexibility in Combat Sports”, examines the contribution and response of this capacity in fighters from different disciplines. Finally, the extensive research experience of the authors in topics related to martial arts and combat sports together with the exhaustive and comprehensive bibliographic review carried out, give a high scientific and academic value to the book. Therefore, it is suggested to all trainers and practitioners from the different combat sports disciplines, to consult this excellent publication.

### Introduction

Martial Arts and Combat Sports (MACS) are a research area in full development [Perez-Gutierrez, Valdes-Badilla, Gomez-Alonso, Gutierrez-Garcia 2015], and despite their long history, there are few scientific books focused on the training process of their participants [Chaabene 2015;

Gonzalez Borda 2013; Magalhaes 2011; Visotzky 2010; Warnick, Martin 2011, just to name a few]. However, a quick search in the catalogues of the national libraries of the United States of America (<https://www.loc.gov/>), United Kingdom (<https://www.bl.uk>) or France (<http://www.bnf.fr>) for example, retrieves a considerable amount of books dedicated to the development and improvement

of the physical capacities involved in MACS. In Spain, the work carried out by Perez-Gutierrez, Alvarez del Palacio and Gutierrez-Garcia [2013] confirmed the existence of a huge number of books dedicated, partially or globally, to the physical conditioning in MACS. In this way, a document offering a scientific approach to the different components involved in the physical conditioning of the MACS fighters is essential for trainers, coaches and practitioners of these specialties.

## The book

*Preparación física para deportes de combate* [Physical conditioning for combat sports], is a book edited by Dr Emerson Franchini and Dr Tomas Herrera-Valenzuela. It has been published by Kinesis editorial in printed format ([www.kinesis.com.co](http://www.kinesis.com.co)). The book is divided in six chapters and a group of 8 authors participating on it. Regarding their institutional affiliation, most of them are members of the Study and Research Group in Fights, Martial Arts and Combat Sports at the University of Sao Paulo (Brazil), and just one of them is affiliated to the University of Santiago de Chile, USACH (Chile). All of them, but specially the editors, have a significant scientific output related to the study of MACS from different approaches, improving and guaranteeing the book's quality.

In relation to the topic of the chapters, first one is titled “Development of the Aerobic Capacity in Fighters”, being signed by Ursula Ferreira Julio, Valeria Leme Goncalves Panissa and Emerson Franchini. This chapter presents current scientific evidence about the aerobic capacity of MACS fighters, distributed in Grappling (*Judo*, *Jiu Jitsu* and *Wrestling*) and Striking (*Muay Thai*, *Karate*, *Taekwondo* and *Boxing*) specialties, and shows information and data from training and competition situations respectively. Several specific tests for monitoring and controlling the aerobic capacity as well as different methods for its training are also described. Then, the possible effects of the aerobic capacity on the fighters' performance is described using longitudinal studies. Lastly, recommendations for training this capacity in the different MACS, after reviewing 92 recent articles, are provided. This chapter includes 10 tables, 26 figures and 14 charts facilitating the understanding of the information presented.

The second chapter, written by Joao Paulo Lopes Da Silva and Emerson Franchini, is titled “Development of the Anaerobic Capacity in Fighters”. It describes the responses and necessities of the striking and grappling fighters in relation to anaerobic power and capacity. In the same way, lactate concentrations before, during and after simulated and official competition are shown together with the energy contribution in different combat sports. Authors also describe a general test (Wingate) and some specific tests such as those created for *judo* (Special Judo Fitness Test) and *taekwondo* (Frequency

Speed of Kick Test and Anaerobic Test for Taekwondo Athletes) for monitoring the conditioning of MACS fighters. Then, the means and methods for the development of this capacity are presented taking into account the last published articles. Lastly, they state some ending considerations for summarizing the contents. This chapter collects 82 references as well as 6 tables and 17 figures as a complement.

The third chapter is dedicated to the “Maximal Strength Training in Fighters” and it has been written by Braulio Henrique Magnani Branco and Emerson Franchini. This section describes the different trainings methods for developing maximal strength used by MACS athletes. The strength responses during simulated and official competitions in striking, grappling or mixed combat sports are presented. Then, the authors list and explain the several tests created for its control, such as Maximal Dynamic Strength Test, Isokinetic Tests and Maximal Isometric Strength Tests. Data is distributed according to the different combat sports presenting their reference values. In the same way, the 1-RM values for some strength exercises (squat, clean, rowing, leg-press, deadlift, leg-curl) in elite athletes from Judo, Wrestling, Mix Martial Arts, Karate and Taekwondo are collected from the last published articles. The chapter finishes with a compilation of orientations for the prescription of strength training including considerations for the muscle hypertrophy and the maximal strength training. This section lists 145 references and includes 10 tables and 36 figures for illustrating the data.

The fourth chapter is titled “Development of the Muscular Power in Fighters” and Jonatas Ferreira Da Silva Santos and Emerson Franchini have carried it out. In this section, these authors show the contributions of the physical capacities involved in muscular power (strength and speed). They also detail the muscular power needs according to the combat sport (striking, grappling or mixed) during general, specific, training and competition situations. Later, the criteria used for selecting the most appropriate assessment taking into account the level of the fighter (elite, intermediate or novice) and his sport as well as the recommendations for monitoring and controlling the development of the muscular power are described. A summary of the means and methods for training this capacity is also shown including traditional, ballistic, plyometric, complex exercises together with Olympic-style weightlifting, and their derivative exercises. To end, the authors offer suggestions in relation to the selection of exercises, their order, intensity, number of sets and repetitions and rest intervals attending to the scientific literature and dividing these data by combat sport. A total of 166 references were reviewed in this chapter and it also included 1 table, 32 figures and 8 charts for facilitating the understanding of the information and strengthening the theoretical background.

The fifth chapter, titled “Development of the Strength Endurance in Fighters” and signed by Rubens Batista Dos Santos Junior and Emerson Franchini, describes the main physical capacities involved in strength endurance (strength and endurance) during the striking, grappling and mixed combats. General and specific tests for assessing the endurance to isometric and dynamic strength in various groups of fighters (Karate Kyokushin, Taekwondo, Wrestling, Judo, Jiu Jitsu and Mix Martial Arts) together with the means and methods for developing them are detailed. Regarding the suggested exercises, the authors explain those dedicated to the core (abdominals, lumbar, pelvis, gluteus and paravertebral muscles) and to lower and higher extremities. Furthermore, recommendations for the development of this capacity by means of traditional and innovate training are provided based on the last published evidence. This chapter contains 53 references, 8 tables and 4 figures supporting the text.

The sixth and last chapter, written by Emerson Franchini and Tomas Herrera-Valenzuela, is titled “Flexibility in Combat Sports”. It presents the contribution and response of flexibility to training sessions and competition events in fighters from several disciplines (Jiu Jitsu, Wrestling, Karate, Taekwondo, Judo and Mix Martial Arts). The Sit and Reach test (the most used in fighters) and the flexibility test for karate when performing mawashi-geri and the goniometer assessments of the range of motion are also included. Despite the discrepancies reported in the scientific literature about this topic and the diversity of techniques (static, ballistic, dynamic and Proprioceptive Neuromuscular Facilitation) used for the improvement of flexibility, authors suggest some instructions for guiding its training programme. This section includes 50 references, 1 table and 4 figures as a complement.

The main strengths of this book are: a) a clear, direct and artifice-free writing for presenting a critical viewpoint in relation to the information and data presented, b) the review of a huge amount and variety of the most updated articles and researches about the topic, c) the inclusion of data from several MACS, condensing in one publication the information about different specialties, d) the presentation of tables, figures and charts, complementing the body of the book, provides a clearer approach to the data and summarize and compare the results found in the revised articles, e) the review of the main terms and theoretical principles of each capacity just at the beginning of each chapter, and f) the presentation of data from training and competition in several MACS, allowing to know the demands and performance in these fields. On the contrary, the published language (Spanish) and the lack of a digital format would be the main limitations of the work, decreasing its spreading to an English-speaking audience and its internet diffusion respectively. A new edition published in English

and with an electronic and/or online version would be desirable for solving these weaknesses.

## Conclusion

The book holds a high academic and scientific value, mainly by its authors' quality, who have an outstanding international reputation and relevance within MACS research. Moreover, the work presents an exhaustive bibliographic review, collecting mostly research articles published during the last 5 years. It should be also highlighted the recommendations offered by the authors for the practical application of the exercises in each chapter, which together with the numerous amount of tables, figures and charts facilitate the understanding of its contents.

Taking into account this kind of works are no popular in libraries and bookstores, Physical conditioning for combat sports could be an excellent handbook for trainers, coaches, teachers and/or scholars of all the combat sports seeking to improve the training and competition performance of their fighters through scientific evidence. We recommend all MACS trainers and practitioners, desiring to progress, to check its contents.

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## **Kondycjonowanie fizyczne w sportach walki: recenzja książki**

**Słowa kluczowe:** sprawność fizyczna, sporty walki, sztuki walki, książka

### **Abstrakt**

Niniejsza praca jest analizą książki zatytułowanej „Kondycjonowanie fizyczne w sportach walki”, wydaną przez dra Emersona Franchini i dra Tomasa Herrera-Valenzuela w 2017 roku.

Książka jest podzielona na sześć rozdziałów, napisanych przez ośmiu autorów. Pierwszy rozdział, „Rozwój wydolności aerobowych wojowników”, analizuje aktualną literaturę w konkretnych sytuacjach treningowych i w czasie zawodów. Drugi rozdział, „Rozwój wydolności beztlenowej zawodników”, opisuje reakcje i potrzeby walczących w odniesieniu do mocy beztlenowej

i wydolności. Trzeci rozdział, „Szkolenie w celu osiągnięcia maksymalnej siły w walczących”, bada różne rodzaje treningu dla szczególnego rozwoju tej wydolności. Czwarty rozdział, „Rozwój siły mięśni walczących”, szczegółowo opisuje potrzeby siły mięśni w zależności od różnych sportów walki oraz podczas treningów i zawodów. Rozdział piąty zatytułowany „Rozwój wytrzymałości walczących” opisuje ogólne i szczegółowe testy dla zawodników, w tym sugestie dotyczące treningu głównych mięśni oraz kończyn górnych i dolnych. Rozdział szósty, „Elastyczność w sportach walki”, analizuje wkład i reakcję tej wydolności u zawodników z różnych dyscyplin, a także obszerne doświadczenie badawcze autorów w tematach związanych ze sztukami walki i sportami walki, wraz z wyczerpującym i kompleksowym przeglądem bibliograficznym, zapewniło tej książce wysoką wartość naukową i akademicką. Dlatego zalecana jest wszystkim trenerom i praktykom z różnych dyscyplin sportów walki.