

# Case Study: *Muay Thai* Practice with Multiple Sclerosis Patients

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**Abstract:** MS (multiple sclerosis) is a demyelinating disease that can cause physical, psychological changes. Objective: Verify the influence of practicing the sport of *Muay Thai* in an MS patient. Method: Case study subject, a 28-year-old single man, functional systems Scale (EDSS) 01, type of MS recurring relapsing was evaluated before and after six months of sports practice. The following instruments were applied: the personality factor battery (BFP); pfister colored pyramids (TPC); concentrated attention test (D2); visual selective attention scale (EASV); social skills inventory (IHS); a nonverbal intelligence test-Vienna Matrices (WMT-2); visual face memory test (MVR); all brazilian psychological test; The Equiscala and Berg scale were performed to evaluate balance; modified fatigue impact scale (MFIS) to assess fatigue; and to evaluate quality of life scale (MSQOL-54). Result: Concerning the attentional aspects, in D2, the result showed improvement in the percentile of errors. The EASV and MVR results presented a lower average and then an average general classification. The results of BFP and TPC did not change. For the IHS, there was a change in the total score that showed more prudence. The score in both balance evaluation indicated excellent balance. The MFIS and MSQOL-54 showed there was no improvement in the fatigue index and quality of life. There was improvement in the level of nonverbal intelligence, visual memory, selective attention and behavioral change in social skills. Conclusion: After practicing *Muay Thai* for six months the patient obtained cognitive improvement.

**Key words:** *Muay Thai*, multiple sclerosis, sports practice.

## 1. Introduction

The MS (multiple sclerosis) is a progressive, chronic and degenerative disease of the CNS (central nervous system). The destruction of the myelin sheath in the nerve fibers (demyelination) can cause motor, physical, psychological, cognitive and visual alterations to manifest diverse symptoms [1].

Among the symptoms a person with MS experiences: double vision, loss of balance, running deficit, dysphagia, urinary incontinence among other urinary symptoms. Also, less intestinal motility, fatigue, this is a very compromising symptom of ADL (activities of daily living) [2]. Depression, affects more than 54% of the patients. Additional symptoms include: cognitive alteration, mainly affecting attention, memory and executive function [3, 4].

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The incidence of MS is higher in women, in the proportion of 2:1, in the Caucasian race and in the age group of 20 to 40 years, affecting the productive age. The most prevalent type of MS is the RR (relapsing recurrent) occurring in 85% of the cases. RR is in relation to the other types of MS: PP (primarily progressive), which predominantly affects men, SP (secondary progressive) and progressive with outbreak (PS) [1].

In Brazil, it is estimated the number of cases is 15 per one hundred thousand inhabitants, and in the world, we have on average 2.5 million people with MS [2].

The disease still has no known cure; the cause is also unknown. There is no specific biological marker to aid in diagnosis that is essentially done through clinical anamnesis by a neurologist, MRI (magnetic resonance imaging) and laboratory test of CSF (cerebrospinal fluid liquor) [1].

We understand that diagnosis and early treatment can help the person to maintain better physical and mental conditions. The team also considered the importance of quality of life in patients with MS; this is a fundamental point for them to continue their activities of work, leisure, social life among many others. It is understood that part of the treatment is not only a drug regimen, but also a series of activities that involve complementary techniques, integrative medicine, and sports. Treating MS is a multidisciplinary action [2].

Therefore, the purpose of this case study was to verify the influence of *Muay Thai* sports practice on cognition, psychism, balance, fatigue, and quality of life of MS patients [5, 6].

## 2. Methods

This case study was carried out with a patient who was treated in ABEM—Brazilian Multiple Sclerosis Association, São Paulo, Brazil, male. He is 28 years old, single, black race, high school education level, type MS recurring relapsing and functional systems scale (EDSS) [7]. with a score of 1, which evaluates motor dysfunctions.

The patient wanted to practice the *Muay Thai* sport, the staff at ABEM were uncertain, if due to his MS, he would be able to practice sports. Therefore, this case study was carried out in a clinical rather than research manner. From these results, we hope to conduct a research investigation to verify the effect of sports practice on patients with MS.

The patient was assessed before and after six months of *Muay Thai* practice. The instruments: concentrated attention test (D2) [8] and visual selective attention scale (EASV) [9] were used to evaluate concentrated, divided and alternated attention; social skills inventory (IHS) [10], to evaluate the relationship form; intelligence test (WMT-2) [11], to measure perception; visual face memory test (MVR) [12], to evaluate memory; personality factor battery (BFP) [13] and colored pyramids of pfister (TPC) [14],

are used to evaluate personality traits, all Brazilian psychological test. A socio-demographic questionnaire was prepared by ABEM to collect data with the Quality of Life Scale (MSQOL-54) [15, 16], as well as, the evaluation of the quality of life; fatigue with the Modified Fatigue Impact Scale MFIS [17] scale was evaluated, and to evaluate the balance the methodology used the scales of Berg [18] and Esquiescala [19].

The psychological instruments, quality of life scale and a socio-demographic questionnaire were applied by a psychologist and trainee of psychology, and the fatigue and balance scales were applied by physical therapist, all team members were ABEM professionals. Before we started the project, the patient had been evaluated by the ABEM neurologist to certify that he was able to practice *Muay Thai*.

The academy in which he would perform the *Muay Thai* practice received a report with all patient clinical information. The patient was allowed to attend normal *Muay Thai* classes.

## 3. Result

Regarding the attentional aspects, in D2, the result showed an improvement in the percentile of errors and in the amplitude of oscillation that went from below average to above average.

The results of the EASV, presented a lower average and then average general classification, this is repeated in the MVR, demonstrating an improvement in the percenti.

In general, the personality traits evaluated by BFP and TPC did not change, the patient showed a state of emotional balance including when responding to questions about neuroticism, extroversion, socialization, achievement, and openness.

In IHS, there was an alteration in the total score that shows more prudence after sports practice.

In the evaluation of balance, the patient obtained the maximum score in both applications, the Equiscalas and Berg Scale, indicating excellent balance.

The results of the non-verbal intelligence test—Vienna Matrices (WMT-2), revealed a change in the non-verbal intelligence level, from lower to medium mean, indicating an improvement in the perception capacity.

MFIS evaluated fatigue, the score indicates that there is no presence of fatigue in the participant.

In the Quality of Life scale (MSQOL-54), both physical health and mental health did not change in the final score, since the values remained within the average for mental health and the upper average for physical health, indicating good capacity perception of the reality of their physical and mental health.

There was médium improvement in the level of nonverbal intelligence, visual memory, selective attention and behavioral change in social skills.

#### 4. Conclusion

After practicing *Muay Thai* for six months the patient obtained cognitive improvement and retained the improvement of his balance, fatigue, quality of life and the psychism. Through observation, the team noticed the improvement and change of the patient's behavior, but due to the susceptibility of the instruments, subtle changes do not measure changes in the final scores of the scales.

The ABEM Team acknowledges that people with multiple sclerosis can benefit from sports practice, when they are provided with medical guidance and neurological, physiotherapeutic and psychological assessments. The assessment can be certified to the patient's physical and psychological health conditions.

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