DETERMINING THE DIFFERENCE BETWEEN THE CHRONOLOGICAL AND BIOLOGICAL AGE OF ATHLETES DIAGNOSED WITH TRIGEMINAL NEURALGIA

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Abstract

Multiple sclerosis (MS) is a chronic neurodegenerative disease characterized by highly variable symptoms that may fluctuate within a single day. Individuals diagnosed with MS experience changes in both functional and cognitive capacities, necessitating continuous adjustments in lifestyle and physical activity. Within a fitness context, the use of resistance bands and training aids such as stationary bicycles or ergometers enables safe, adapted exercise on days when symptoms are stable. However, the primary goal of physical activity in the context of MS is to establish a sustainable form of movement that remains feasible even in the presence of symptoms. This research applied inferential statistical analysis using Spearman's rank-order correlation to assess the relationships between variables, resulting in a correlation matrix with Spearman's rho values and corresponding p-values. Findings indicate positive effects of regular physical activity in mitigating MS symptoms such as fatigue, mobility difficulties, and cognitive impairments. Beyond physical benefits, exercise contributes to a greater sense of control over the disease and enhances social and emotional well-being.

A specific feature of this study is its focus on individuals living on the Dalmatian coast, where climatic factors-especially elevated temperatures for most of the year—further influence exercise adaptations, particularly due to the common occurrence of heat intolerance in people with MS. Accordingly, the importance of a personalized exercise approach is emphasized, aligned with current recommendations from the National MS Society (USA), which include physical activity guidelines tailored to all levels of functional ability.

Keywords: multiple sclerosis, exercise intervention, Spearman's correlation, recreational sport.

Manuscrito recibido: 01/08/2025
Manuscrito aceptado: 24/09/2025

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Introduction

When a person-including a recreational athlete-is diagnosed with a condition such as multiple sclerosis (MS), understanding the role of physical activity in disease management becomes crucial. Studies have shown that regular exercise can positively impact various aspects of life for individuals with MS, including mood enhancement, improved strength, balance, and functional mobility, as well as reduced fatigue (Latimer-Cheung et al., 2013). Although physical inactivity and sedentary behaviour are relatively common among people with MS, growing evidence supports the idea that individualized exercise can improve both physical and psychological health and quality of life (Latimer-Cheung et al., 2013; Motl & Pilutti, 2012). Nevertheless, challenges such as fatigue, heat intolerance, and mobility limitations often hinder consistent exercise participation, especially in recreational athletes. These symptoms require specific modifications to exercise routines (Motl & Pilutti, 2012). Consequently, fitness routines must evolve to reflect the fluctuating symptoms of MS in recreational athletes. This approach aligns with current guidelines emphasizing individualized exercise programming to optimize benefits and minimize risks (Dalgas et al., 2019). While recreational athletes may not maintain previous fitness levels, they continue to adapt their routines to incorporate exercise as an integral part of daily life (Androja et al., 2020). Ongoing adaptation and mindful engagement with one's capabilities and limitations are key to successful long-term disease management through physical activity (Miočić & Komšo, 2020). This study addresses the lack of understanding regarding how recreational athletes with MS adapt their training regimens over time in response to evolving symptoms, particularly from the perspective of lived experience (Du et al., 2024). There is a recognized need to explore subjective experiences of exercise among individuals with MS to inform realistic, sustainable, and motivating exercise programs that account for the challenges of this unpredictable disease. The aim of this paper is to explore and present the personal experience of exercise adaptation in recreational athletes living with MS and to compare these insights with current scientific knowledge. The study combines personal narrative and literature review to highlight the importance of a flexible, individualized approach to physical activity in MS. Research questions include: How do recreational athletes with MS perceive and adapt their training over time? How can these subjective experiences be reconciled with scientific recommendations for physical activity? What are the most common challenges to maintaining regular training among individuals with MS?

Context and Personal Perspective

For many individuals, physical exercise was an integral part of their identity and daily routine prior to being diagnosed with multiple sclerosis (MS). As long-time recreational athletes, they were accustomed to a dynamic lifestyle that included various forms of physical activity such as hiking, water sports, running, functional training, and occasional participation in amateur competitions. However, the diagnosis of MS introduced a profound shift in how these individuals perceive, experience, and engage in physical activity. The onset of initial symptoms—such as chronic fatigue, heat sensitivity, and intermittent limb weakness—significantly affected their ability to maintain previous levels of physical performance. Initially, many continued with their usual training intensity, often ignoring the changes. However, as Motl and Pilutti (2012) point out, individuals with MS who do not adjust their activity intensity may experience worsening symptoms and further declines in quality of life.

Moving forward, recreational athletes are compelled to adopt a different mind-set transitioning from someone who "pushes physical limits through training" to someone who exercises with the goals of preserving functionality, reducing symptoms, and maintaining mental stability and social inclusion. As such, training becomes perceived less as a means to athletic progression and more as a therapeutic tool. This shift in perspective is supported by existing literature, which recognizes physical activity as an "informal intervention for symptom management, preserving independence, and improving quality of life in individuals with MS" (Latimer-Cheung et al., 2013, p. 1801). This process necessitates acceptance of flexibility in training—adapting the duration, intensity, and type of activity to the body's daily condition (Miočić et al., 2020). According to Rodríguez and colleagues (2021), on days when symptoms are mild, individuals engage in short functional workouts using body weight, whereas during periods of pronounced fatigue, exercise routines consist of light stretching and breathing exercises. This approach aligns with the recommendations of Dalgas et al. (2019), who emphasize the importance of individualized and appropriate physical activity in people with MS. Beyond physical benefits, exercise helps individuals retain a sense of continuity and control—maintaining connection with the "athlete I was before the diagnosis" (Miočić & Komšo, 2020). As Grazioli et al. (2019) suggest, although the athletic identity is altered, it remains present—now redefined as that of a person who consciously engages in exercise as a form of self-care and self-sustenance.

Methods

This study employed a mixed methods design, integrating qualitative auto ethnographic approaches with quantitative descriptive statistics. This combination enabled the integration of the subjective dimension of personal experience with objective patterns of behaviour and perception within a broader population of individuals diagnosed with multiple sclerosis (MS) who engage in physical activity.

Qualitative Component. The qualitative portion of the study was based on auto ethnography, a research method that blends autobiographical writing with ethnographic analysis (Ellis, Adams, & Bochner, 2011; Sparkes, 2000). Participants—recreational athletes diagnosed with MS-maintained diary entries, retrospective notes, and reflective essays over a six-month period.

The collected narrative data covered topics such as training adaptations, emotional responses, and shifts in perceptions of physical activity. The data were analyzed using the thematic analysis method proposed by Braun and Clarke (2006), which allows for the identification of patterns of meaning within qualitative data. Three key themes emerged from the analysis: Redefinition of athletic identity, Flexibility and adaptation of the training process, Psychological significance and function of exercise in managing disease symptoms.

Quantitative Component. The quantitative segment of the research involved descriptive statistical analysis derived from a structured online questionnaire. The study sample included 40 recreational athletes with MS, aged 28 to 62 years (M = 44.2; SD = 8.1), consisting of 60% women (n = 24) and 40% men (n = 16). The questionnaire comprised the following thematic sections: Demographic data (age, gender, disease duration), Exercise habits (frequency, duration, type of activity), Perceived exercise intensity (self-assessed), and Self-assessment of the impact of MS symptoms on daily functioning and ability to engage in physical activity.

The goal of the quantitative analysis was to identify patterns in exercise behaviour and perception among individuals with MS, and to compare these findings with the results of the qualitative (auto ethnographic) analysis, in order to construct a more comprehensive understanding of the experience of physical activity in the context of MS.

For additional scientific rigor, an inferential statistical method was applied—Spearman's rank-order correlation (Field, 2013)—to examine the relationships among four variables: disease duration, exercise frequency, exercise intensity, and the perceived impact of MS symptoms. The resulting data analysis yielded a correlation matrix with Spearman's rho values and associated p-values for significance testing.

Results and Discussion

The quantitative findings serve to complement the qualitative insights, affirming that the author's personal experiences are not isolated, but rather reflect broader patterns among recreational athletes with multiple sclerosis (MS) who strive to maintain an active lifestyle. Both qualitative and quantitative analyses reveal a complex and dynamic adaptation process in physical activity among individuals with MS, with a particular emphasis on the importance of maintaining a sense of identity and control through movement.

Practical Implications of the Research Findings

The study results suggest several key guidelines for working with recreational athletes diagnosed with MS, especially those with a history of regular training:

A) Flexibility in Training Program Design Training programs should be dynamic and adaptable to the individual's current physical condition. This involves modifications in intensity, duration, and type of activity according to daily fluctuations in symptoms (Dalgas et al., 2019).

B) Preservation of Identity Through Movement. For recreational athletes, exercise is not merely a physical activity, but part of their personal identity. Training should support a sense of continuity with their "athletic self," even if through modified forms of physical activity.

C) Psychosocial Support Through Exercise. Survey results show that 92.5% of participants report a positive psychological effect of exercise. Incorporating physical activity as a therapeutic tool within multidisciplinary rehabilitation can play a key role in preserving mental health.

D) Interdisciplinary Collaboration. Optimal support for individuals with MS involves collaboration among professionals such as physiotherapists, kinesiologists, neurologists, and psychologists, ensuring that physical activity is integrated into holistic health care.

Key Descriptive Statistics 85% of participants (n = 34) reported the need to modify their training regimen after MS diagnosis. 72.5% (n = 29) exercised 2–4 times per week, while only 10% (n = 4) trained more than four times weekly. The most common types of activity reported were: Walking (78%), Stretching (62%), Swimming (38%), Light functional training (35%) and 47.5% identified fatigue as the greatest barrier to regular training, followed by balance and coordination difficulties (25%).

A significant 92.5% (n = 37) of participants stated that engaging in physical activity positively affected their mental health, particularly in relation to stress, anxiety, social connectedness, and perceived control.

Further Interpretation and Thematic Findings Redefinition of Athletic Identity.

1. Autoethnographic reflections revealed a gradual, emotionally demanding shift in identity-from someone who trains to increase fitness and performance to someone who exercises for self-preservation. This transformation is supported by the survey results, where 92.5% reported that exercise contributes to maintaining psychological stability. This aligns with previous research highlighting the mental health benefits of physical activity in individuals with MS (Latimer-Cheung et al., 2013).

2. Adaptation of the Training Process. Descriptive statistics showed that the majority (85%) regularly adjust the form, duration, and intensity of their exercise based on daily symptom variability. As previously noted, the most common activities include walking (78%), stretching (62%), swimming (38%), and functional training (35%). These activities are typically low to moderate in intensity, consistent with current recommendations for people with MS (Dalgas et al., 2019). The author's personal experience further validates the necessity for flexibility, as days with more pronounced symptoms often limit activity to light stretching and breathing exercises (Table 1).

3. Perceived Barriers and the Importance of Adaptation. Fatigue was identified as the main barrier to physical activity by 47.5% of participants, while 25% reported balance-related problems. These findings align with the literature, which identifies fatigue as one of the strongest predictors of reduced physical activity in people with MS (Motl & Pilutti, 2012). Despite these challenges, most participants found ways to maintain some form of physical activity, shifting exercise from a "recreational" practice to a means of self-care, as evidenced by the survey results. This redefinition of the role of physical activity in participants' lives highlights the importance of developing individualized and flexible training programs that account for the physical, emotional, and identity-related dimensions of living with this chronic condition (Table 2).

Study Limitations, like any research, this study has certain limitations: Sample size: The quantitative analysis is based on a relatively small sample (n = 40), limiting generalizability. Subjectivity of the autoethnographic approach: While auto ethnography provides rich, in-depth insights, it is inherently subjective and cannot represent all individuals with MS. Self-reported data: All quantitative data rely on self-reporting, which may be subject to social desirability bias and inaccurate assessments. Symptom variability in MS: Due to the heterogeneous nature of the disease, drawing universal conclusions applicable to all individuals with MS is challenging (Table 3).

Correlational Analysis. Spearman's rank correlation analysis was conducted to examine relationships among four variables: duration of illness, frequency of exercise, intensity of exercise, and perceived impact of MS symptoms. The results (Pallant, 2020) show that none of the correlations reached statistical significance (all p > 0.05). However, a slight positive relationship was observed between exercise frequency and exercise intensity (ρ = 0.260), as well as between exercise frequency and perceived symptom impact (ρ = 0.265).

Table 1. Most Common Types of Activity Among Recreational Athletes with MS.

Type of Activity	Percentage (%)
Walking	78%
Stretching	62%
Swimming	38%
Functional training	35%

Table 2. Perceived Main Barriers to Engaging in Physical Activity.

Type of Barrier	Percentage (%)
Fatigue	47.50%
Balance problems	25%
Other barriers	27.50%

Table 3. Frequency of Physical Activity in Recreational Athletes with MS.

Exercise Frequency	Percentage (%)
2–4 times per week	72.50%
More than 4 times per week	10%
Less than 2 times per week	17.50%

Table 4. Spearman's Correlation Between Key Variables.

Variables	ρ (rho)	p-value
Duration of illness – Exercise frequency	−0.017	0.919
Duration of illness – Exercise intensity	0.088	0.593
Duration of illness – Symptom impact	0.116	0.481
Exercise frequency – Exercise intensity	0.26	0.11
Exercise frequency – Symptom impact	0.265	0.103
Exercise intensity – Symptom impact	0.151	0.36

Correlations involving illness duration were weak or negligible (Table 4).

Conclusion

This study highlights that, despite the numerous challenges brought on by a diagnosis of multiple sclerosis (MS), physical activity remains a crucial factor in preserving quality of life, personal identity, social inclusion, and psychological stability among recreational athletes. By integrating autoethnographic insight with quantitative data, it was found that individuals with MS rarely abandon exercise altogether. Instead, they redefine and adapt it, using training as a therapeutic tool. The findings point to several key needs: A sensitized, multidimensional approach by professionals who understand the specific challenges of living with MS, the development of adaptable training models, offering flexibility according to fluctuating symptoms, Greater awareness of the psychological value of exercise, even when performed in minimal amounts. To deepen the analytical scope of the study, a Spearman's rank-order correlation was conducted, revealing a slight positive association between exercise frequency and intensity ($\rho = 0.26$), and between exercise frequency and perceived symptom impact ($\rho = 0.265$). Ultimately, physical activity emerges as a space of resistance against the disease—a domain where the individual retains an active role in their own health, not only through bodily movement but also through the meaning they assign to motion, rhythm, and the discipline of everyday social life. Future research could expand on this work by: Conducting longitudinal studies tracking changes in exercise engagement across different stages of the disease, Comparing distinct subgroups (e.g., previously active vs. inactive individuals with MS), Including larger and more diverse samples, as well as in-depth qualitative interviews to better understand individual adaptation strategies and Exploring the potential of digital tools and online exercise programs for people with MS-particularly in the context of accessibility and self-monitoring of progress.

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