



Investigating Key Factors Influencing Adhesion and Adherence in Weight Training

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Abstract: The practice of weight training can result in many benefits for its practitioners, however the proportion of individuals who practice weight training regularly is low. The objective of this study was to investigate the reasons for adhesion and adherence in weight training. The sample was composed of 75 participants, men and women, who practice weight training, in a gym located in Florianópolis, Brazil. Data was collected using a questionnaire, which resulted in health and quality of life being the main reasons for joining and adhering to weight training. In relation to the characteristics of the gym that contribute to the for adhesion and adherence, the following were identified: the location of the gym, the financial cost, the technical qualifications and the service of the professionals. Through these results, Physical Education professionals will be able to create loyalty strategies for their students, taking into account the reasons for exercising at that location.

Keywords: Strength training, Health, Exercise, Motivation

1. Introduction

The practice of physical activity is recognized as a crucial protective factor for health, being associated with reductions in chronic diseases and mortality (Jordakieva *et al.* 2023; Gomes *et al.* 2021). However, 59, 4% of Brazilians do not practice a sufficient level of physical activity (Vigitel Brazil 2023, 2023). This problem extends globally, highlighting physical inactivity as a general concern (Gomes, Lopes & Alvim, 2021). In this context, health professionals should encourage not just the act of beginning to exercise, a process known as adhesion, but, above all, encourage practitioners to continue/remain in practice, a process defined as adherence (Oliveira *et al.*, 2017).

Studies have demonstrated that the practice of physical activity can be promoted for different reasons, including: dissatisfaction with body image (Dominski *et al.* 2020), reasons related to health and quality of life (Lee *et al.*, 2012). These reasons generally have external characteristics, as what they reflect something external to be "conquered" (Deci & Ryan, 2000).

Correspondingly, for bodybuilding, one of the most practiced modalities in Brazil and worldwide (Correa *et al.*, 2022), motivational factors include health benefits and disease prevention (Santos *et al.*, 2018; Durstine *et al.*, 2013), as well as the enhancement of body aesthetics (Nuzzo, 2023), self-esteem, and socialization (Brito *et al.*, 2021).

Although an increasing number of people are joining gyms, maintaining regular physical activity still remains a challenge (Brito *et al.*, 2021). Nevertheless, achieving long-lasting results requires consistent practice (Collado-Mateo *et al.*, 2021). Factors such as high social vulnerability (Galvim *et al.*, 2019), the commitments of adult life, obesity (Galvim *et al.*, 2019), depression, stress, body image concerns and unemployment (Leung *et al.*, 2017) are associated with lower adherence to physical activity.

The general review by Collado-Mateo *et al.* (2021) affirmed that adherence to physical exercise is influenced by multiple variables that can be controlled and modified by researchers and professionals. They

highlight factors such as the design of the exercise program, participant enjoyment and to avoid negative experiences, multidisciplinary professional involvement, use of technology, perfect integration into daily routines, social support networks, diligent monitoring of progress, active involvement of the participant and goal setting are critical factors that influence adherence.

In order to better understand the factors that influence adhesion and adherence with weight training, it is important to consider the Self-Determination Theory (SDT). This theory proposes that motivation to practice physical exercise is influenced by three basic psychological necessities: autonomy, competence and interpersonal relationships. The SDT defends that when psychological needs are satisfied, the individual feels more motivated and engaged in physical exercise (Ryan & Deci, 2017).

Even though theories such as SDT are being studied in a more integrated way with exercise science, there is a lack of studies that evaluate adhesion and adherence in the most practiced modalities and debating the findings in the light of theories of human behavior.

In this context, this study aims to understand the reasons adhesion and adhering to weight training, identifying the characteristics of the place of practice that contribute to this, the benefits perceived by practitioners and the principal difficulties encountered by them to continue practicing. Furthermore, we intend to discuss the findings based on SDT.

2. Materials and Methods

This study consists of descriptive, of an applied nature, of a transversal and quantitative research.

The study sample was selected non-randomly, for convenience, in a weight training gym located within the facilities of a sports and social club in Florianópolis SC, totaling 75 participants. Participants who agreed to participate signed the Free and Informed Consent Form (ICF), with data collected solely for research purposes and subject anonymity guaranteed. The present study had its project approved by the UFSC Human Research Ethics Committee under number 3.371.523.

Included in the study were individuals engaged in weight training, attending the gym between one and six times per week, aged 18 years or older, regardless of gender.

The invitation to participate was made verbally, when students entered or left the gym. After signing the

ICF, participants received the questionnaire, which was filled out in the gym area. The invitation was mostly made by one of the researchers on the night shift, but there was also collaboration from other professionals at the gym. who handed out the questionnaires on the other shifts. In addition, at other times the researcher went to the academy to clarify doubts and monitor the progress of the research.

The questionnaire used was validated through the contribution and analysis of three doctors who study the subject. The questionnaire contains twenty closed questions, six questions to characterize the sample, such as: gender, age, education, marital status, professional activity and monthly income. Another eight questions related to the practice of weight training, such as: length of time practiced, duration and frequency of the session, shift practiced and also some questions with details about the possible practice of other physical activities. It also contained five questions in which it was possible to choose three alternatives, numbering 1, 2 and 3, with 1 being the primary reason, 2 being the secondary reason and 3 being the tertiary reason for each question. These questions were related to the reasons for adhesion, adherence, factors that contributed to the choice of the place of practice, and also the benefits and difficulties perceived with the practice. Additionally, there was one question regarding interruptions in the practice, totaling 20 closed-ended questions. After explaining the questionnaire, there was no influence from the researcher, aiming for greater freedom and reliability of responses.

After collecting the data, it was analyzed quantitatively, described by absolute and relative frequency, using Microsoft Excel software as the analytical tool.

3. Results

The gym had 836 enrolled students, of which approximately 600 were attending during the collection period. This study included 75 adults (≥ 18 years old) of both genders (60% men and 40% women), with a significant portion (52%) were aged between 25 and 44, corresponding to 12.5% of the students attending the weight training room at a sports club in the city of Florianópolis-SC.

Regarding questions related to weight training (Table 1), the majority of participants practiced weight training in the evening (57.3%) and reported more than 6 years of practice (33.3%). The most common frequency was 3 weekly weight training sessions (28%)

and the most common session duration was 30-60 minutes (52%). Furthermore, 65.3% of the individuals practiced other sports in addition to weight training, with soccer (29%) being the most practiced sport, followed by running (27%) and swimming (22%).

When dealing with the reasons for adhesion to weight training practice (Figure 1), it is clear that the primary reason most cited among practitioners was "Health and quality of life" (62%). On the other hand, "Improvement of physical fitness" appears with a higher percentage both as a secondary and tertiary reason (40% and 28%, respectively). It is noteworthy that "Enhancement of body aesthetics" (28%) also holds a significant percentage as a secondary reasons.

In line with the reasons for adhesion when examining the main reasons for adherence to weight training practice (Figure 2), "Health and quality of life" (57.3%)

also appears as the primary reason, followed by "Improvement of physical fitness" (44%) as the secondary reason. However, "Enhancement of body aesthetics" (32%) emerged as the most cited tertiary reason among practitioners, a different point to the reasons for adhesion. It's also worth noting that "Improvement of physical fitness" (26.6%) and "Pleasure in practice" (21.3%) also appear with significant percentages as tertiary reasons for some practitioners.

Furthermore, among the characteristics of the gym that contribute to the adhesion and adherence of practitioners to weight training practice (Figure 3), the "Gym location (proximity to work or residence)" stands out, being cited more in both the primary and secondary characteristics (40% and 24%, respectively).

Table 1. Questions related to weight training practice

Variable	n (%)
Time of day for weight training	
Morning	22 (29,3)
Afternoon	10 (13,3)
Night	43 (57,3)
Duration of weight training practice	
Up to 6 months	8 (10,6)
6 months to 1 year	10 (13,3)
> 1 to 2 years	12 (16,0)
> 2 to 3 years	9 (12,0)
> 3 to 4 years	3 (4,0)
> 4 to 5 years	5 (6,6)
> 5 to 6 years	3 (4,0)
> 6 years	25 (33,3)
Weekly frequency	
Up to 2 times	18 (24,0)
3 times	21 (28,0)
4 times	15 (20,0)
5 times	13 (17,3)
6 times	8 (10,6)
Duration of weight training session	
Up to 30 minutes	1 (1,3)
30-60 minutes	39 (52,0)
60-90 minutes.	33 (44,0)
90-120 minutes.	2 (2,6)
More than 120 minutes.	0 (0,0)

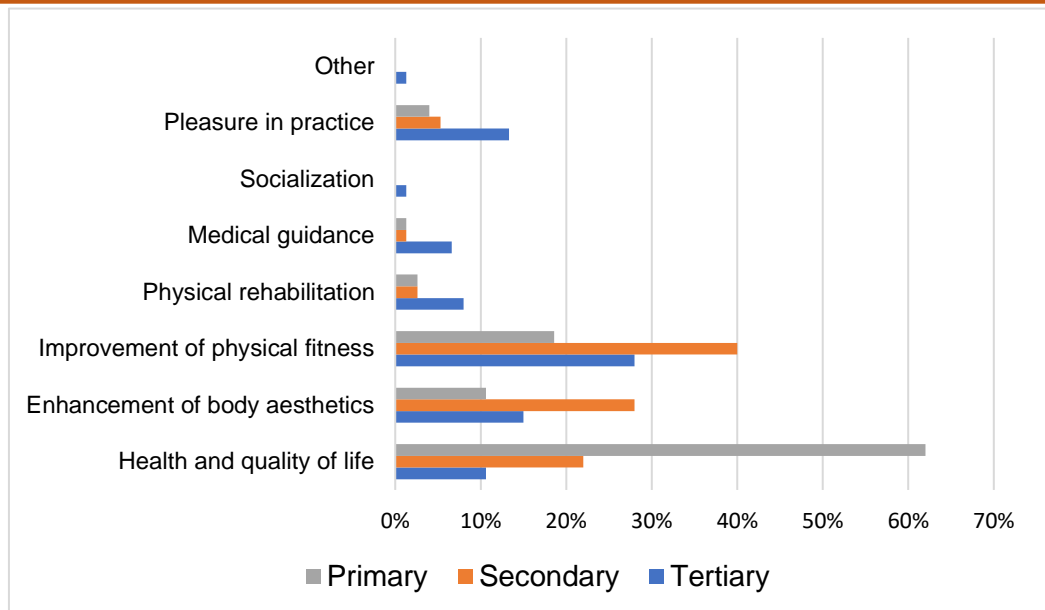


Figure 1. Reasons for adhesion to weight training practice

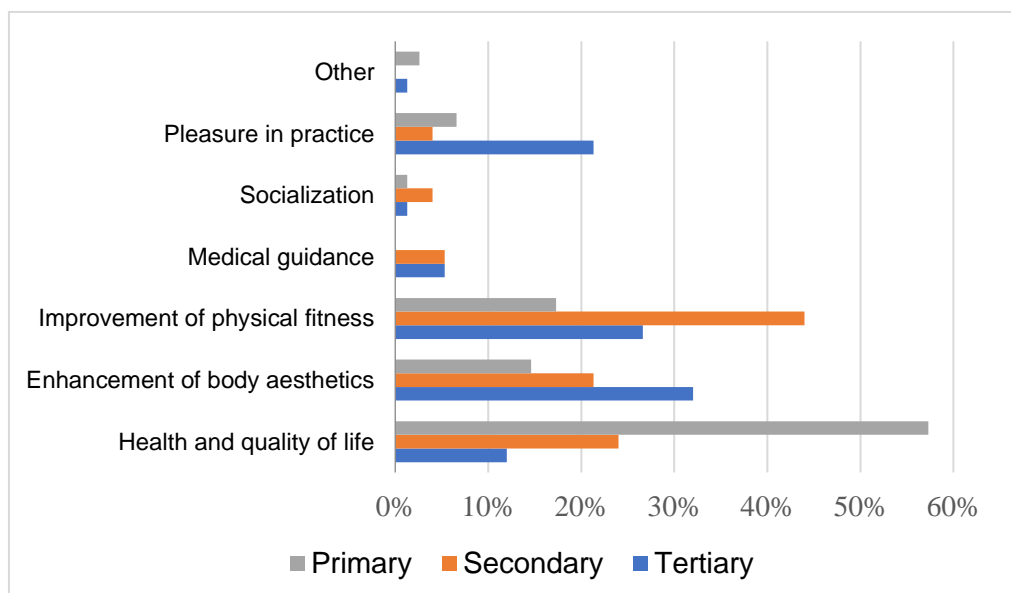


Figure 2. Reasons for adherence to weight training practice

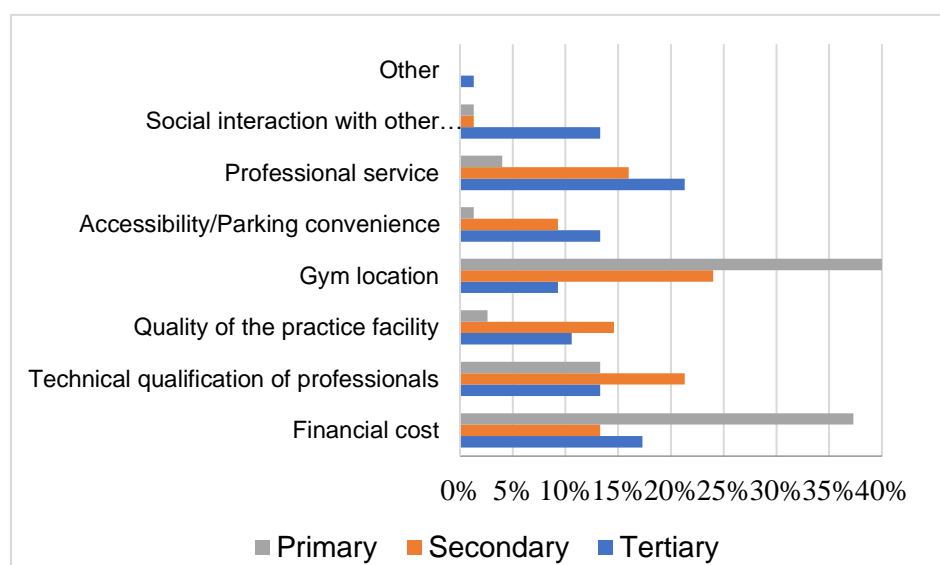


Figure 3. Characteristics of the gym that contribute to the adhesion and adherence of practitioners

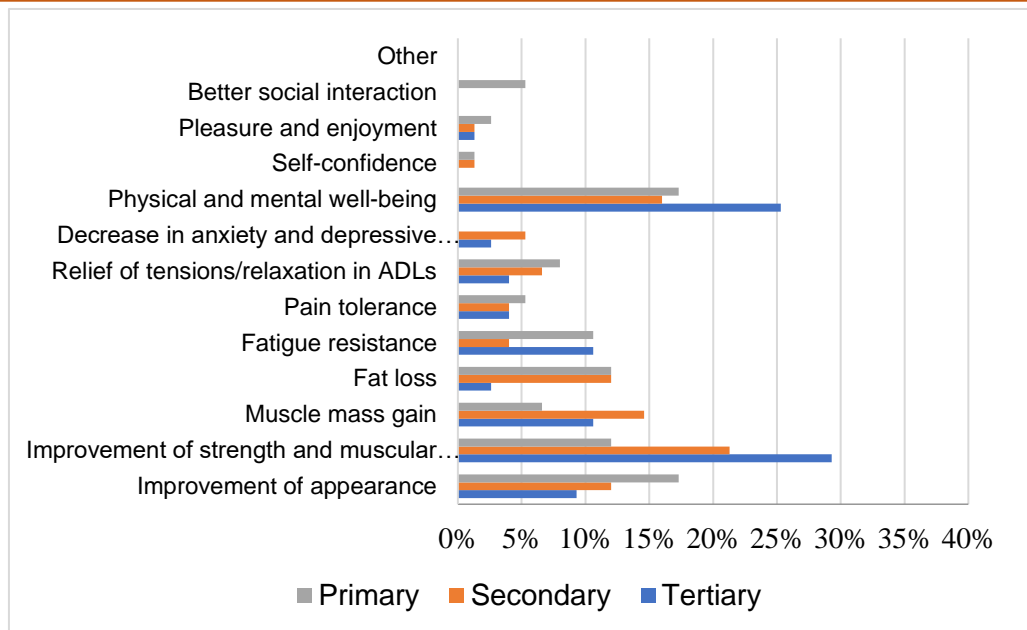


Figure 4. Perceived benefits by practitioners from weight training practice. Legend: ADLS: Activities of Daily Living

On the other hand, "Financial cost" (37.3%) also stands out as a primary characteristic, and the "Technical qualification of professionals" (21.3%) as a secondary one, as well as "Professional service" (21.3%) as a tertiary characteristic.

In Figure 4, the perceived benefits of weight training practice by practitioners are presented. "Improvement of strength and muscular endurance" (29.3% and 21.3% respectively) stands out as the primary and secondary benefit most cited by practitioners. "Improvement of appearance" (17.3%) and "Physical and mental well-being" (17.3%) appear with the same percentages as tertiary benefits. It is worth highlighting that "Physical and mental well-being" (25.3%) and "Muscle mass gain" (14.6%) were the primary and secondary benefits respectively most cited after "Improvement of strength and muscular endurance".

When asked if weight training practitioners find it difficult to practice this sport, the majority responded with "No" (70.6%). For those who answered "Yes" ($n=22$, 29.3%), the primary reason most often cited as a difficulty in practicing exercise was "Lack of time" (77.2%), followed by "Lack of self-motivation" (45.4%) as a secondary reason. Finally, the most cited tertiary reasons were "Difficulty in achieving the objectives proposed by the exercise" (18.1%) and "Crowded workout rooms" (18.1%).

Regarding the interruption of regular weight training practice, the majority of practitioners

responded "Yes" (77.3%), they have already stopped weight training practice.

4. Discussion

Firstly, with regard to the weekly frequency, duration of sessions and time of training, the majority of participants reported practicing the sport in the evening, three times a week, for between 30 and 90 minutes. This frequency and duration are aligned with the main physical activity recommendations for strength training, as according to the guidelines, it is recommended that adults practice strength exercises two or more times a week (World Health Organization, 2020; Ministério da Saúde, 2021). Furthermore, a positive aspect of this sample is that a third of the participants have more than 6 years of practice, as many practitioners tend to interrupt training in the first months of adaptation (Hugger, 2022).

Regarding consistency in weight training practice, the SDT proposed by Ryan and Deci in 2000 suggests that intrinsic motivation is crucial. This means that the practice of weight training is enhanced when motivated by internal factors, such as interest, satisfaction and sense of competence, rather than external factors, such as social pressure or extrinsic rewards (Ryan & Deci, 2000). However, our results suggest that weight training practitioners are oriented toward extrinsic factors, specifically identified regulation. In this process, people recognize and accept the underlying value of a behavior. By identifying with the value of a behavior, people more fully internalize its

regulation; they accept him more fully as their own. In this process, people identify with the importance of exercising regularly for their own health and well-being and exercise more willingly than others with introjected extrinsic motivation, for example, driven by self-esteem, pride or threats of guilt and shame (Deci & Ryan, 2000).

Although they are still being extrinsically motivated, because the behavior is still instrumental (in this case, to be healthier), rather than being done solely as a source of spontaneous pleasure and satisfaction, the behavior is more autonomous. Internalization is more complete than other, more external forms of motivation, because the behaviour has already become part of people's identity. Regulations based on identifications are expected to be better maintained and associated with greater commitment and performance (Deci & Ryan, 2000)

According to the sample data, the majority of participants practice another sports besides weight training and the most frequently mentioned were soccer, running and swimming. This data may be related to the location of the weight training center, since it is a sports and social club, and members have access to various sports and leisure activities, which helps weight training to practice other sports, or even to practice weight training with the purpose of preparing and strengthen their bodies for those sports, as strength training provides muscle and joint strengthening and prevents/improves injuries (Jordão *et al.* 2022).

It is observed that offering different modalities in the same location favors compliance with physical activity guidelines, as most practitioners engage in both two or more weight training sessions and some form of activity with a significant aerobic component.

Regarding the central point of the study, the data indicated that the reasons for adhesion and adherence to weight training practice are similar, with "health and quality of life" being the most cited primary reason in both. Our findings are corroborated by other studies that also found health to be the main reason for weight training practice (Santos *et al.*, 2018; Schutz, 2019). Still for activities carried out in the gym, another study also found health/well-being/quality of life as the main motivations for practice (Zamai *et al.*, 2021).

Moreover, "improvement of physical fitness" was the most cited secondary reason for both adhesion and adherence to weight training practice, appearing as a tertiary reason for adhesion. It is worth mentioning that the "Enhancement of body aesthetics" appears as a secondary reason for adhesion in a significant number

of practitioners, being a tertiary reason for adherence to weight training practice. Corroborating this information, Brito *et al.* (2021) state that many people seek out weight training in gyms in search of health, better quality of life, physical conditioning, leisure or aesthetics.

Among the main reasons for adhesion and adherence, we find health and quality of life, improvement of physical conditioning and enhancement of body aesthetics. According to the authors, the perception of health and improved conditioning can be perceived immediately during or after practice, being considered internal feelings and intrinsic motivation, which contributes to adherence to the practice of physical activity (Rodrigues *et al.*, 2020). The enhancement of esthetics can be observed in different ways, depending on the reason that makes the individual seek improvement in aesthetics. If a person feels that they are being pressured to appear a certain way, seek approval, or avoid embarrassment, they are less likely to maintain physical activity for long periods, as both external and introjected forms of motivation and amotivation have been shown to be positively associated with negative consequences, such as exercise abandonment, lower intentions to engage in physical activity, and other maladaptive outcomes (Teixeira *et al.*, 2012).

In relation to the characteristics of the gym that contribute to adhesion and adherence to weight training practice, it was found that the gym's location was the most cited among practitioners, both as a primary and secondary characteristic, corroborating findings from a study where the main factors for choosing the gym were the variety of classes and the location (Zamai *et al.*, 2021). It is worth highlighting that attributes such as financial cost also appeared with a significant percentage, and weight training, unlike sports like running and walking, requires equipment and, therefore, is almost impossible to do without some financial commitment. This, without going into the merits that for any practice it is important to have the support of a qualified professional, both to provide adequate training and to correct possible errors in execution. It should also be noted that the service provided by professionals appears as a tertiary characteristic and their technical qualifications also have significant percentages among the characteristics of the academy that contribute to adhesion and adherence. Therefore, Physical Education professionals working in weight training rooms, in addition to being able to prescribe strength training, need to constantly seek new

knowledge and strategies to facilitate the adhesion and adherence of students to physical exercise (Prestes *et al.* 2016).

Among the benefits perceived of weight training practitioners, "Improvement of strength and muscular endurance" was the most cited, confirming studies that link training to muscular changes (Schoenfeld *et al.* 2014). "Physical and mental well-being" also appears as being important to keep practitioners engaged in the activity. Regarding difficulties, the majority of participants reported not encountering difficulties in practicing physical exercises, however, it is worth highlighting that for those who encounter difficulties, the primary reason was lack of time, followed by lack of self-motivation, difficulty in achieving goals proposed by the exercise and crowded workout rooms. In this way, personal aspects of the practitioner, their needs, their objectives regarding physical exercise, their evaluation of the facilities and the staff, are essential aspects for greater customer retention and adherence to physical exercise (Tarnowski *et al.*, 2014).

Finally, it is important to note that the sample of the present study was predominantly composed of young, male and married adults, with a monthly income above six minimum wages, reflecting their level of education, in which the majority had higher education and postgraduate degrees. We believe that these characteristics are due to the gym being associated with a sports and social club, in which many families are members. Therefore, the extrapolation of findings must consider the aforementioned context in which the study was carried out. Furthermore, the study had limitations linked to the data collection procedure, which did not have a standard for distributing the questionnaires (before or after the sessions).

5. Conclusion

In conclusion, the main reasons for adhesion and adherence among weight training practitioners involve improving health and quality of life, physical conditioning and body aesthetics. The main characteristics of gyms that influence adherence included location and financial cost. The perceived benefits were mainly improvements in strength, muscular endurance, appearance and physical and mental well-being. Despite these benefits, challenges such as lack of time and self-motivation were significant challenges, resulting in many practitioners previously interrupting their training routines.

These findings highlight the importance of managers and professionals developing fidelity strategies that focus on the motivations that encourage individuals to practice in weight training. Understanding these motivations can help create targeted approaches to increase adherence and maintain participation in the long term.

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Author Contribution Statement

Juliane Bregalda: Manuscript writing and data interpretation. **Marlon de Araújo Daniel:** Study conception and design, data collection and organization, data interpretation. **Maria Eduarda Venera:** Manuscript writing. **Thiago Sousa Matias:** Manuscript writing and critical review. **Rodrigo Ferrari:** Manuscript writing and critical review. **Rodrigo Sudatti Delevatti:** Study conception, overall supervision, methodological guidance, and final manuscript review.

Ethics Approval Statement

Approval for this study was sought from the Institutional Review Board (IRB).

Informed Consent

The consent form was signed before the commencement of the study.

Conflict of Interest

The authors declare that there was no conflict of interest.

Does this article pass screening for similarity?

Yes

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