

Benefit of water aerobics on the quality of life in older adults over 70 years

Benefício da hidroginástica na qualidade de vida em idosos com mais de 70 anos

Beneficio de la hidrogimnasia en la calidad de vida de los adultos mayores de más de 70 años

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Jaqueline Alves da Silva

ORCID: <https://orcid.org/0009-0008-5435-7271>

Centro Universitário Fametro, Brazil

E-mail: jaque22allves@gmail.com

Sidney Miranda Lopes

ORCID: <https://orcid.org/0009-0005-3688-0585>

Centro Universitário Fametro, Brazil

E-mail: sidneyara.m.lopes@gmail.com

Clodoaldo Matias da Silva

ORCID: <https://orcid.org/0000-0002-3923-8839>

Universidade Federal do Amazonas, Brazil

E-mail: cms.1978@hotmail.com

Paula Adriana dos Santos de Fontes

ORCID: <https://orcid.org/0000-0002-6583-4490>

Centro Universitário Fametro, Brazil

E-mail: paulasfontes19@gmail.com

Abstract

The research investigates the influence of prolonged water aerobics practice on handgrip strength in older adults, recognising this indicator as an essential marker of functionality and autonomy during ageing. The general objective is to analyse the influence of this practice on the preservation of functionality. The specific objectives are to identify evidence of functional gains, to understand social and clinical effects, and to discuss implications for public policies that promote health and autonomy in ageing. The study adopts the integrative review as its methodological approach, gathering scientific evidence published in national and international databases, with inclusion criteria considering age group, regular water aerobics practice, and objective evaluation of handgrip strength. The methodological process comprises stages of search, screening, full reading, and critical analysis of the studies, resulting in the systematisation of the main findings and recommendations. Preliminary results indicate that water aerobics, when practised continuously, supports the maintenance of muscular strength, promotes balance, enhances flexibility, and contributes to psychosocial well-being. Such evidence reinforces the role of water aerobics as a preventive and therapeutic strategy capable of reducing risks associated with sarcopenia and functional decline. It is concluded that the regular practice of this aquatic modality enhances vitality, strengthens autonomy, and provides concrete support for professional practice in Physical Education with an emphasis on Gerontology, while also contributing to the formulation of public policies and intervention programmes aimed at healthy ageing.

Keywords: Ageing; Aquatic exercise; Autonomy; Elderly; Muscle strength.

Resumo

A pesquisa investiga a influência da prática prolongada da hidroginástica na força de preensão manual em pessoas idosas, reconhecendo esse indicador como marcador importante da funcionalidade e da autonomia no envelhecimento. O objetivo geral é analisar a influência dessa prática na preservação da funcionalidade. Os objetivos específicos são identificar evidências de ganhos funcionais, compreender os efeitos sociais e clínicos e discutir implicações para políticas públicas de promoção da saúde e da autonomia no envelhecimento. O estudo adota a revisão integrativa como metodologia, reunindo evidências científicas publicadas em bases de dados nacionais e internacionais, com critérios de inclusão que consideram a faixa etária, a prática regular de hidroginástica e a avaliação objetiva da força de preensão. O processo metodológico compreende etapas de busca, triagem, leitura completa e análise crítica dos estudos, resultando na sistematização dos principais achados e recomendações. Os resultados preliminares indicam que a hidroginástica, quando praticada de forma contínua, favorece a manutenção da força muscular, promove equilíbrio, estimula a flexibilidade e contribui para o bem-estar psicossocial. Tais evidências reforçam o papel da hidroginástica como estratégia preventiva e terapêutica, capaz de reduzir riscos associados à sarcopenia e ao declínio funcional. Conclui-se que a prática regular dessa modalidade aquática amplia a vitalidade, fortalece a autonomia e oferece subsídios concretos para a atuação profissional em Educação Física com ênfase em Gerontologia,

contribuindo também para a formulação de políticas públicas e programas de intervenção voltados ao envelhecimento saudável.

Palavras-chave: Autonomia; Envelhecimento; Exercício aquático; Força muscular; Idosos.

Resumen

La investigación analiza la influencia de la práctica prolongada de la gimnasia acuática en la fuerza de prensión manual en personas mayores, reconociendo este indicador como un marcador esencial de funcionalidad y autonomía durante el envejecimiento. El objetivo general es analizar la influencia de esta práctica en la preservación de la funcionalidad. Los objetivos específicos son identificar evidencias de ganancias funcionales, comprender los efectos sociales y clínicos y discutir las implicaciones para las políticas públicas que promueven la salud y la autonomía en el envejecimiento. El estudio adopta la revisión integradora como enfoque metodológico, reuniendo evidencias científicas publicadas en bases de datos nacionales e internacionales, con criterios de inclusión que consideran el grupo etario, la práctica regular de gimnasia acuática y la evaluación objetiva de la fuerza de prensión. El proceso metodológico comprende etapas de búsqueda, selección, lectura completa y análisis crítico de los estudios, resultando en la sistematización de los principales hallazgos y recomendaciones. Los resultados preliminares indican que la gimnasia acuática, cuando se practica de forma continua, favorece el mantenimiento de la fuerza muscular, promueve el equilibrio, mejora la flexibilidad y contribuye al bienestar psicosocial. Tales evidencias refuerzan el papel de la gimnasia acuática como estrategia preventiva y terapéutica capaz de reducir los riesgos asociados con la sarcopenia y el deterioro funcional. Se concluye que la práctica regular de esta modalidad acuática amplía la vitalidad, fortalece la autonomía y ofrece apoyo concreto para la práctica profesional en Educación Física con énfasis en Gerontología, contribuyendo además a la formulación de políticas públicas y programas de intervención orientados al envejecimiento saludable.

Palabras clave: Autonomía; Ejercicio acuático; Envejecimiento; Fuerza muscular; Personas mayores.

1. Introduction

The process of human ageing, which has intensified in recent decades, has raised concerns about the preservation of functionality and autonomy (Campos, 2021). The literature shows that regular physical activity plays a central role in both physical and mental health (Adams, 2023), strengthening the independence of older adults and enhancing their social and clinical well-being. In this context, there is an increasing need to expand the debate on health promotion strategies, particularly in view of rising life expectancy.

Among the available modalities, water aerobics stands out as an accessible, low-impact option recommended for older adults, as it reduces the risk of injury and promotes significant functional gains such as balance, strength, and vitality (Ávila Pereira Júnior, 2023). Long-term aquatic exercise programmes have shown positive effects on physiological, anthropometric, and functional parameters (Moura, 2020; Vale, 2020), reinforcing their importance not only for individual health but also for public health, by reducing complications and costs associated with ageing.

Furthermore, in the field of Physical Education, particularly when focused on older adults, scientific analysis of water aerobics proves highly relevant given the scarcity of integrative reviews in this area. Evidence highlights benefits related to flexibility and muscle strength (Lima, 2018; Antunes, 2022), yet the literature points to the need for systematised investigations that connect empirical results with intervention proposals (Prado, 2022; Häfele, 2022).

From another perspective, it is essential to understand how aquatic practice influences specific variables of functionality, such as handgrip strength. This indicator is recognised as a sensitive marker of muscle health and even survival (Shin, 2017), and its relationship with aquatic exercise requires further investigation (Yoo, 2017). Thus, the present integrative literature review aims to consolidate scientific knowledge on water aerobics and its effects on the functionality of older women.

The research question guiding this study is: how does prolonged practice of water aerobics contribute to the improvement or maintenance of handgrip strength in older women? The general objective is to analyse the influence of this

practice on the preservation of functionality. The specific objectives are to identify evidence of functional gains, to understand social and clinical effects, and to discuss implications for public policies promoting health and autonomy in ageing.

2. Methodology

An integrative systematic bibliographic study was conducted, combining quantitative and qualitative approaches to ensure analytical depth and methodological rigour. In quantitative terms, the review encompassed twenty (20) selected publications, whereas the qualitative dimension focused on the interpretative and critical examination of their contents, in line with the principles outlined by Snyder (2019) and Pereira et al. (2018). This dual approach made it possible to structure the research with methodological transparency and coherence, aligning the process of data selection, analysis, and synthesis with internationally recognised standards of scientific investigation. The following subsections detail the stages of identification, screening, and evaluation of the studies that form the empirical and theoretical foundation of this review.

The methodological approach adopted in this study followed the principles of an integrative review, which seeks to gather, analyse, and critically synthesise the knowledge produced on a specific theme. To ensure rigour and transparency, the search was conducted in the SciELO, PubMed, LILACS, and CAPES databases, recognised in the fields of health and Physical Education, prioritising studies published in recent years and directly relevant to the practice of water aerobics among older women (Figure 1). This initial stage resulted in a total of 454 publications identified, reflecting the breadth and vitality of the scientific debate on physical exercise and ageing.

Subsequently, duplicate publications were excluded, leaving 149 articles for preliminary analysis. This refinement was fundamental to ensure that only unique studies were considered, avoiding redundancies and increasing the reliability of the review. From this set, 87 publications progressed to the screening stage, in which titles and abstracts were evaluated based on pre-established inclusion criteria, such as the participants' age group, systematic practice of water aerobics, and measurement of muscle strength indicators.

During screening, 62 publications were excluded for not meeting the defined criteria, either because they did not focus on the older population or because they deviated from the central axis of the investigation. Thus, 87 studies remained eligible for full-text reading, allowing for a more detailed analysis of their objectives, methods, and findings. This process ensured that the review remained faithful to the research problem, valuing the works that genuinely contribute to understanding the influence of water aerobics on handgrip strength in older women.

To guarantee reproducibility, the descriptors used in the search were specified: “hidroginástica” (water aerobics), “idosas” (older women), “força de preensão manual” (handgrip strength), “exercício físico” (physical exercise), and “envelhecimento” (ageing), combined with Boolean operators AND and OR, in accordance with DeCS/MeSH standards. In addition, exclusion criteria were established regarding language (only articles in Portuguese, English, and Spanish were considered) and type of publication (clinical trials, longitudinal studies, and systematic reviews), which allowed greater clarity and objectivity in screening.

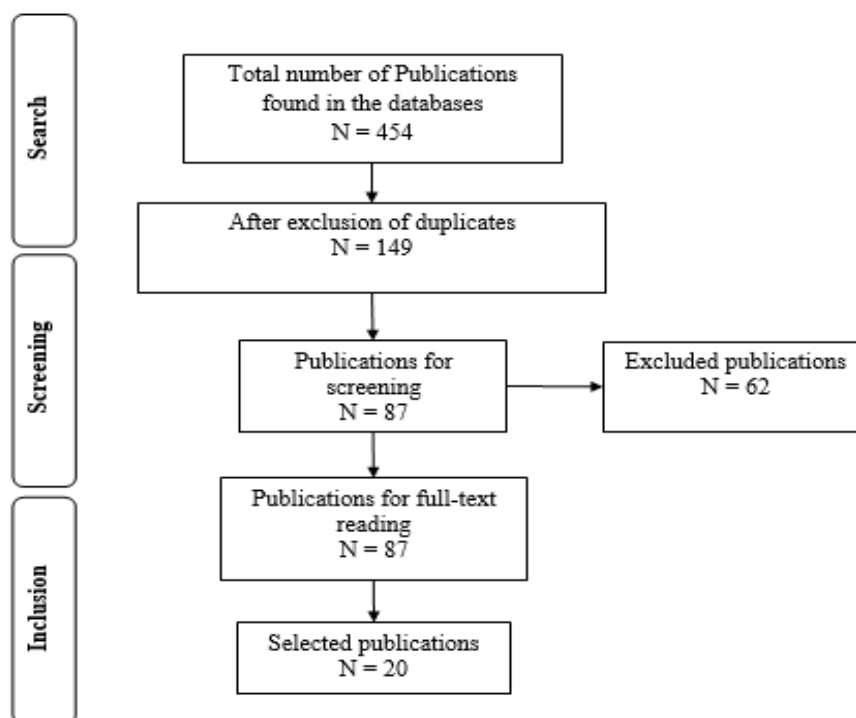
In SciELO, the search strategy was structured with the combination (“hidroginástica” AND “idosas”) OR (“exercício físico” AND “envelhecimento”), filtering articles in Portuguese, English, and Spanish. In PubMed, equivalent MeSH terms were used: (“Hydrogymnastics” OR “Aquatic Exercise”) AND (“Aged, 65 and over” OR “Elderly Women”) AND (“Hand Strength” OR “Handgrip”), restricted to the defined languages and selected study types.

In LILACS, DeCS descriptors were employed: (“hidroginástica” OR “exercício aquático”) AND (“idosas” OR “idoso”) AND (“força de preensão manual” OR “força muscular”), applying filters for articles in Portuguese, Spanish, and English, according to the inclusion criteria. In the CAPES Portal, the search was broadened to include synonyms and free

terms, using (“hidroginástica” AND “força de preensão” AND “envelhecimento”), with filters applied for time frame, language, and type of publication, ensuring the selection of relevant studies.

To ensure coherence and clarity in the presentation of data, it is necessary to introduce the visual representation that summarises the stages of the methodological process. Next, Figure 1 presents a flowchart illustrating the progressive reduction in the number of studies identified, from the initial search to the final selection of twenty (20) articles, which are listed in Table 1 and constitute the analytical basis of this review. This visual synthesis facilitates the reader’s understanding of the systematic procedures adopted, demonstrating the methodological transparency and rigour maintained throughout the research process.

Figure 1. Research Flowchart.



Source: Prepared by Authors (2025).

After full-text reading, 20 publications were selected to compose the final synthesis, forming the analytical corpus of this review. In this context, the flowchart presented in Figure 1 illustrates in a didactic manner all the stages covered, from the initial search to the selection of the included studies. The choice of this method, besides demonstrating transparency, reflects the commitment to building solid knowledge capable of engaging with clinical practice, community intervention, and scientific production in Physical Education with an emphasis on Gerontology.

The concluding stage of the methodology made it possible to gather a consistent body of evidence, organised into a final corpus composed of seventeen publications selected according to rigorous search and analysis criteria. This synthesis represents not only the refinement of the material retrieved but also the selection of studies that genuinely address the research question, preserving coherence between the study’s objectives and the available data. Thus, it establishes the starting point for presenting the results, in which water aerobics will be analysed as a clinically and socially relevant practice in the context of ageing.

The results section therefore presents the systematisation of the eligible studies in analytical tables that highlight both methodological characterisation and the main clinical and functional outcomes. This arrangement is not limited to a technical

description but seeks to provide the reader with an expanded understanding of the scope of water aerobics, emphasising its impacts on handgrip strength as well as on cognitive, psychosocial, and quality-of-life dimensions. In this way, the results are configured as a space for critical synthesis and recognition of the evidence that underpins the role of aquatic activity in promoting health among older adults.

3. Results

The following table brings together the selected studies, presenting in an organised manner the main methodological aspects and the findings of each investigation. It contains information on the author and year, country of study, methodology adopted, sample profile, and the most relevant results described. This systematisation makes it possible to identify convergences and divergences among the different works, offering a critical and comparative perspective. Furthermore, the tabular structure enables a clear, objective, and direct reading. Presenting the references in this way facilitates understanding of the overall panorama of the literature. Thus, the analysis becomes more precise, responding directly to the specific objectives established.

Table 1 – Studies on the benefits of water aerobics and other physical practices on the quality of life of older adults over 70 years.

Author/Year	Country	Methodology	Sample	Age	Instruments	Main Findings
Adams et al., 2023	USA	Systematic review and meta-analysis	Middle-aged adults	40–60 years	Functional tests, fall and strength questionnaires	Increased strength, balance, reduced falls and improved quality of life.
Antunes et al., 2022	Brazil	Cross-sectional study	Older adults	≥ 65 years	Quality of life questionnaires, handgrip dynamometer	Regular physical exercise promoted vitality, handgrip strength and better quality of life.
Araujo et al., 2021	Brazil	Correlational study	Independent older adults	65–80 years	GDLAM tests, Katz scale	Functional fitness correlated with autonomy and independence, reinforcing importance of physical activity.
Ávila Pereira Júnior, 2023	Brazil	Narrative review	Older adults	≥ 60 years	Synthesis of published studies	Water aerobics provided benefits in physical health, quality of life, muscle strength and psychological well-being.
Binder et al., 2015	USA	Randomised clinical trial	Older adults	≥ 65 years	Progressive resistance training, body composition assessment	Resistance training increased lean mass, reduced body fat and improved body composition.
Campos et al., 2021	Portugal	Systematic review	Older adults	≥ 60 years	Review of clinical trials on aquatic exercise	Aquatic exercise improved memory, mood and attention, strengthening neuropsychological health.
Chen; Ling & Cheng, 2023	China	Cross-sectional study	Older adults	≥ 65 years	Body Mass Index (BMI), health questionnaires	Physical activity associated with BMI influenced overall health and quality of life.
Häfele et al., 2022	Brazil	Randomised clinical trial	Older women	60–75 years	Aquatic training, vitality questionnaires	Combined aquatic training increased vitality, emotional well-being and quality of life.
Hunter; Mccarthy & Bamman, 2014	USA	Literature review	Older adults	≥ 65 years	Synthesis of studies on resistance training	Resistance training improved muscle strength, functionality and sarcopenia prevention.

Lee et al., 2022	South Korea	Longitudinal study	Middle-aged adults	45–65 years	Quality of life questionnaires, longitudinal follow-up	Continuous physical activity brought long-lasting benefits to quality of life.
Lima et al., 2018	Brazil	Comparative study	Adult women	40–60 years	Flexibility tests, strength dynamometer	Water aerobics practitioners showed greater flexibility, muscle strength and physical conditioning.
Moura et al., 2020	Brazil	Longitudinal study	Older adults	≥ 65 years	Laboratory tests, anthropometric and haemodynamic evaluation	Forty-five weeks of water aerobics improved lipid, haemodynamic and anthropometric profile.
Nilsson et al., 2024	Sweden	Randomised clinical trial	Postmenopausal women	50–70 years	Vasomotor symptom questionnaires, cardiovascular tests	Resistance training reduced vasomotor symptoms and cardiovascular risks.
Prado et al., 2022	Brazil	Meta-analysis	Young and older adults	18–75 years	Review of clinical trials	Aquatic exercise improved muscle strength across different age groups.
Shin et al., 2017	South Korea	Cross-sectional study	Healthy older adults	≥ 65 years	Handgrip dynamometer, respiratory strength tests	Respiratory muscle strength associated with handgrip and skeletal mass.
Simas et al., 2017	Australia	Systematic review and meta-analysis	Adults and older adults	40–80 years	Bone mineral density assessments	Aquatic exercise improved bone health and osteoporosis prevention.
Taaffe et al., 2017	Australia	Clinical trial	Older adults	≥ 65 years	Resistance training, blood pressure monitoring	Resistance training reduced central blood pressure and benefited cardiovascular health.
Vale et al., 2020	Brazil	Experimental study	Sedentary older women	65–80 years	Aquatic training, balance and strength tests	Aquatic training improved balance, strength and flexibility.
Vieira; Alves Júnior & Lírio Gurgel, 2025	Brazil	Longitudinal study	Older women	≥ 70 years	Handgrip dynamometer	Prolonged water aerobics increased handgrip strength in older women.
Yoo; Choi & Ha, 2017	South Korea	Cross-sectional study	Korean adults	40–70 years	Handgrip dynamometer, sarcopenia diagnosis	Handgrip strength used as diagnostic criterion for sarcopenia in adults.

Source: Prepared by Authors (2025).

The studies analysed demonstrate that the practice of physical exercise, particularly water aerobics and resistance training, produces consistent effects on improving body composition, muscle strength, and balance in older adults, reinforcing its role as a preventive strategy against sarcopenia and functional decline (Binder et al., 2015; Hunter; McCarthy & Bamman, 2014; Nilsson et al., 2024). Furthermore, findings from clinical trials and systematic reviews confirm that maintaining these practices over extended periods contributes to lasting gains in physical health and quality of life.

The literature also highlights water aerobics as a highly relevant therapeutic resource, capable of providing significant benefits in cardiovascular, respiratory, and neuromuscular parameters. Brazilian and international studies reveal its capacity to increase vitality, improve balance, and preserve functional autonomy, even among sedentary older women or those with physical limitations (Ávila Pereira Júnior, 2023; Vale et al., 2020; Vieira; Alves Júnior & Lírio Gurgel, 2025). This aquatic modality therefore plays an important role in promoting active ageing.

Another recurring finding concerns the relationship between physical activity, mental health, and psychological well-being. Recent reviews indicate that aquatic exercise has a positive impact on factors such as memory, attention, and mood,

reinforcing the importance of these practices in the neuropsychological dimension of ageing (Campos et al., 2021). This perspective broadens the understanding of water aerobics beyond its physical aspects, revealing integrated effects on the overall health of older adults.

In addition to psychophysical effects, improvements in haemodynamic and lipid parameters are observed as a result of long-term practice of water aerobics, particularly in reducing central blood pressure and regulating metabolic profiles (Moura et al., 2020; Taaffe et al., 2017). These results point to the relevance of exercise as a non-pharmacological alternative for preventing and controlling cardiovascular diseases, which are frequently observed in older populations.

It is also worth noting that continuous practice from middle age onwards has positive repercussions in early old age. Longitudinal research confirms that sustained physical activity throughout life preserves quality of life, muscle strength, and autonomy, proving to be a decisive factor in preventing functional declines associated with ageing (Lee et al., 2022; Adams et al., 2023). This reinforces the need for public policies that encourage early adherence to regular physical activity.

Finally, the systematised evidence shows that both aquatic and land-based interventions present complementary effects, suggesting that integrating modalities may enhance outcomes. The methodological diversity of the studies analysed, ranging from reviews to clinical trials, strengthens the robustness of the findings and confirms that water aerobics, particularly in older adults over 70 years of age, represents an effective tool in promoting health, longevity, and quality of life (Simas et al., 2017; Häfele et al., 2022; Prado et al., 2022).

4. Discussion

The analysis of the results shows that the prolonged practice of water aerobics has consistent effects on handgrip strength in older women, with this indicator being one of the most sensitive for assessing functionality in ageing. Adams (2023) demonstrates that regular physical activity is decisive for maintaining balance and autonomy, while Ávila Pereira Júnior (2023) reinforces water aerobics as a privileged modality due to its safety and adaptability, both converging in advocating the continuous engagement of participants in systematic practices.

The reviewed studies confirm that quality of life intertwines with gains in muscle strength and vitality, as highlighted by Antunes (2022) and Häfele (2022), who identified increased perceptions of autonomy among practising older women. In this sense, Prado (2022) complements the discussion by demonstrating that handgrip strength not only reflects muscular condition but also connects directly to functional independence, confirming the clinical and social relevance of water aerobics.

In the functional field, Araújo (2021) shows that aquatic exercise programmes preserve overall fitness, while Lima et al. (2018) emphasise that practice promotes gains in flexibility and strength. These findings dialogue with Hunter, McCarthy, and Bamman (2014), who attribute a decisive role to resistance training in preventing sarcopenia, shaping a scenario in which water aerobics emerges as a low-cost and high-impact intervention for active longevity.

The benefits are not limited to the physical domain. Campos (2021) points to positive cognitive and emotional impacts, while Antunes (2022) relates vitality and well-being to regular practice. These results are added to Vale's (2020) analysis, which highlights improvements in balance and community bonds, suggesting that water aerobics functions as an integrative and humanised practice. Thus, the literature converges on the understanding that its effects transcend bodily functionality, extending into psychosocial dimensions.

From a physiological perspective, Moura (2020) demonstrates benefits for lipid and haemodynamic parameters, while Taaffe (2017) confirms the reduction of central blood pressure in older adults. Both interact with Nilsson (2024), who highlights the reduction of vasomotor symptoms in postmenopausal women, forming a body of evidence that reinforces the

clinical relevance of the practice. Thus, different perspectives confirm that water aerobics expands horizons of public health prevention and should be recognised as a consistent therapeutic resource.

Finally, Yoo (2017) and Shin (2017) identify handgrip strength as a reliable marker of sarcopenia, complementing the findings of Lee (2022), who relates the continuity of physical activity from middle age to quality of life in later years. These studies interact with those of Simas (2017), which associate aquatic exercise with bone health, forming a robust panorama, albeit still limited by methodological gaps, that reinforces water aerobics as an essential strategy in Gerontology and Physical Education.

5. Final Considerations

The analyses carried out confirmed that the prolonged practice of water aerobics exerts a significant influence on the preservation of handgrip strength in older women, consolidating it as an effective intervention for maintaining functional autonomy. The results revealed that the initial hypothesis was supported, as the reviewed studies pointed to consistent gains in both physical performance and quality of life. In this way, the research question was answered by demonstrating that water aerobics constitutes a strategic resource for healthy ageing.

The implications of this finding go beyond the physiological dimension, as they show that aquatic practice also benefits social and psychological aspects, strengthening vitality and enhancing the sense of belonging. Exercise in an aquatic environment, by integrating functional and relational dimensions, proves to be a humanised practice capable of meeting contemporary demands of care for the older population. This conclusion reaffirms the academic and clinical relevance of the topic, in addition to supporting its inclusion in public health promotion policies.

From a theoretical perspective, the study broadens the understanding of handgrip strength as a marker of health and longevity, bringing contributions to the field of Physical Education with an emphasis on Gerontology. From a practical standpoint, it strengthens the role of water aerobics as both a preventive and intervention strategy in different contexts, whether community-based, clinical, or institutional. This connection between science and practice demonstrates that academic research, when oriented towards real life, contributes effectively to addressing the challenges of ageing.

Finally, this work paves the way for new studies that may further explore the relationship between water aerobics and functional health across different age groups and sociocultural contexts. Future investigations may examine long-term practice, assess complementary markers of physical performance, and include innovative monitoring methods. In this way, scientific production will continue to expand horizons of knowledge, providing support for more effective and integrative practices capable of responding to the demands of an increasingly ageing society.

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