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Internacionais em Prescrição do
Exercício e Promoção da Saúde

Conference in Exercise Prescription and Health Promotion

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BOOK OF ABSTRACTS

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III Conference in Exercise Prescription and Health Promotion
Science for the benefit of the community

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EDITORIAL

It is with great satisfaction that we present to you this book of abstracts from the III Conference on Exercise Prescription and Health Promotion: Science for the Benefit of the Community. This event, promoted by the ESECS - Polytechnic University of Leiria, stands as a landmark initiative in the academic and scientific landscape, reflecting the shared commitment of researchers, professionals, and institutions to place exercise and physical activity at the center of health and well-being strategies.

We live in an era where sedentary lifestyles and physical inactivity are recognized as critical factors contributing to the rise of non-communicable chronic diseases, significantly affecting population health and longevity. In this context, the role of exercise and physical activity goes beyond athletic performance, establishing itself as an essential tool for improving physical and mental health, preventing diseases, and promoting an active and fulfilling life. Throughout this conference, we addressed topics of great relevance, ranging from the application of exercise in clinical and rehabilitation contexts to its effects on specific populations, such as older adults, individuals with intellectual and developmental disabilities, and those living with chronic conditions like type 2 diabetes or cancer. Special attention was also given to exploring innovative solutions, such as tele-exercise, which overcomes physical and logistical barriers and fosters adherence to physical activity programs in challenging environments.

This book brings together outstanding work from researchers across various disciplines, showcasing contributions that illustrate the transformative potential of exercise and physical activity—not only for individual health but also in fostering more active and healthier communities. The scientific evidence compiled here underscores the importance of tailored, accessible, and sustainable interventions that can be implemented in both clinical settings and community or educational environments.

More than just an academic record, this publication is a call to action. May these pages inspire health professionals, educators, policymakers, and all those interested in promoting physical activity to adopt evidence-based practices, foster interdisciplinary collaborations, and strengthen the integration of exercise into diverse societal contexts.

We must also express our deep gratitude to all authors, speakers, participants, and members of the organizing and scientific committees, whose dedication and effort were crucial to the success of this event. Our recognition also extends to the institutions that supported and believed in this initiative.

May this book of abstracts, and the conference it documents, serve as another step towards a future where exercise and physical activity are widely recognized and valued as fundamental pillars of health and well-being.

Dean of the School of Education and Social Sciences of the Polytechnic University of Leiria
-Pedro Morouço

PROGRAMA

DECEMBER 13TH

09:00 – Reception and Registration

10:00 – Opening Session | Pedro Morouço

Initial Statement

Auditorium 1

10:30 – Conference 1 | Tomás García Calvo | University of Extremadura, Spain

The role of educational institutions in promoting physical activity and health

Moderator: Rogério Salvador

Auditorium 1

11:15 – COFFE BREAK

11:30 – Oral Communications 1

Localization: Auditorium 1

Moderator: Diana Santos

1. *Risk of work-related musculoskeletal disorders in healthcare professionals in the intensive care unit* | Vanda Silva, Cristina Inácio, Ricardo Picoito, Ezequiel Pessoa, Cristina Marques-Vieira

2. *Early rehabilitation of individuals with acquired muscle weakness: A systematic review protocol* | Ezequiel Pessoa, Ricardo Picoito, Vanda Silva, Estela Martinho, Cristina Marques-Vieira

3. *Body composition and functionality in patients with psychotic disorders: The necessity of physical exercise* | Sofia Silva, Dulce Maia, Paula Mota, Eduarda Coelho

4. *Cardiac rehabilitation in post-acute coronary syndrome: physical activity in Phase 2 and 3*
Filipa Januário, Mariana Ferreira Carvalho, Carolina Gonçalves, Margarida Cabral, Alexandre Antunes

13:00 – Lunch

15:00 – Oral Communications 2

Localization: Auditorium 1

Moderator: Raul Antunes

1. *Exploring rural-urban differences in mobility, executive and cognitive function among older adults* | Catarina F. Martins, Jéssica Carvalho, Lara Carneiro, Maria P. Mota

2. *Physical activity, anxiety, depression, and body image in trans individuals: An exploratory study* | Joana Oliveira, Diogo Monteiro, Miguel Jacinto, Rui Matos, Nuno Amaro, Raúl Antunes

3. *Influence of practicing sports modalities on the quality of life and well-being of individuals with intellectual and developmental disabilities* | Susana Diz, Aldo M. Costa, Miguel Jacinto, Nuno Amaro, Rui Matos, Raúl Antunes

4. *Physical fitness, motor competence, and quality of life in youth with IDD: Intervention program in the football modality* | Vânia Cosme, Rui Matos, Raúl Antunes

16:15 – Coffee Break

16:30 – Conference 2 | César Chaves Oliveira | Polytechnic Institute of Viana do Castelo, Portugal

Do's and Don'ts of Exercise with Type 2 Diabetes Patients

Moderator: Filipe Rodrigues

Auditorium 1

DECEMBER 14TH

10:00 – Oral Communications 3

Localization: Auditorium 1

Moderator: Miguel Jacinto

1. *Enhancing health, quality of life, and well-being: The role of physical exercise in older adults*
Carolina Alexandra Cabo, Mário Cunha Espada, José Alberto Parraça, Orlando Fernandes

2. *Impact of sensorimotor training on older people's physical capabilities* | Carolina Alexandra Cabo, Orlando Fernandes, Mário Cunha Espada, Víctor Hernández-Beltrán, Sara Santos, José Alberto Parraça

3. *Perceived effort and pulmonary capacity of Portuguese Air Force aviation pilots after 12 weeks of workplace Yoga training* | Sara Santos, Orlando Fernandes, Carolina A. Cabo, Mário Espada, Filipe Melo, José A. Parraça

4. *The effect of a multicomponent physical exercise program on institutionalized older adults with hypertension* | *Elisabete Silva, Raul Antunes, Filipe Rodrigues*

11:15 – Coffee Break

11:30 – Conference 2 | José Vilaça Alves | University of Trás-os-Montes e Alto Douro, Portugal

Tele-exercise for breast cancer patients during chemotherapy treatment

Moderator: Ricardo Rebelo-Gonçalves

Auditorium 1

12:30 – Closing session

III JIPEPS
2024

CONFERENCES

Importance of educational institutions as promoters of physical activity and health

Tomás García Calvo

Universidad de Extremadura, Spain

ABSTRACT

The importance of educational institutions in fostering physical activity and promoting health among students has gained increasing recognition in recent years. This presentation highlights the critical role schools play in encouraging lifelong health habits through structured and innovative physical activity strategies. The primary objective is to discuss evidence-based practices that enhance students' physical activity levels, thereby improving their overall well-being and academic performance. A comprehensive review of current strategies implemented in educational settings was conducted. Key practices, such as active breaks, physically engaging recesses, and physically active learning sessions, were analyzed for their efficacy and practicality. The study also examined the integration of daily physical activity initiatives, such as classroom-based exercises, walking or biking to school programs, and after-school sports clubs, all aimed at reducing sedentary behavior and enhancing physical engagement. Input from educational stakeholders, including teachers and administrators, was gathered to understand the feasibility and challenges of implementing these strategies. Findings suggest that active breaks and recess periods that incorporate structured physical activity improve student concentration, reduce behavioral issues, and promote a healthier lifestyle. Active learning methods, which integrate movement into academic tasks, have shown promising results in enhancing both cognitive engagement and physical fitness. Additionally, school policies that encourage active transportation and extracurricular physical activity provide significant health benefits and foster a supportive environment for physical engagement. These strategies emphasize the essential role of educational institutions in promoting a culture of health and activity. By implementing feasible, low-cost interventions that require minimal training, schools can make a substantial impact on students' physical and mental health. This presentation aims to provide educators and policymakers with practical tools and a framework for developing effective, sustainable programs that encourage lifelong health habits.

Keywords: *well-being; physical and mental health; schools; physical activity.*

Do's and Don'ts of Exercise with Type 2 Diabetes Patients

César Oliveira Chaves

Polytechnic Institute of Viana do Castelo, Portugal

ABSTRACT

Physical activity and exercise are two of the best strategies for the prevention, control, and eventual remission of type 2 diabetes. Growing scientific evidence has elucidated the physiological mechanisms that determine the effectiveness of these interventions, and today it is possible to see that different methodologies also promote different results. In this communication, we address some of the factors that most influence glycemic control in the short, medium, and long term. In particular, we will show that adopting incorrect strategies and methodologies can generate effects contrary to those desired, and we will analyze how to always choose the safest and most effective strategies to increase the quality of life for individuals with type 2 diabetes.

Keywords: *Exercise timing; circadian rhythm; glycemic control; blood glucose; high-intensity interval training.*

Tele-exercise for breast cancer patients during chemotherapy treatment

José Vilaça

University of Trás-os-Montes e Alto Douro, Portugal

ABSTRACT

Breast cancer (BC) is the most common malignancy among women worldwide and the leading cause of female cancer-related mortality. According to the World Health Organization, approximately 2.3 million new cases were diagnosed in 2022, accounting for 24.5% of all female cancers. BC can occur at any age following puberty, although its incidence increases with age. It is a multifactorial disease influenced by genetic, hormonal, and environmental factors, including physical inactivity, obesity, use of oral contraceptives, and hormonal therapies. BC treatment is often associated with a significant reduction in physical activity levels, which can remain low for up to a decade after therapy completion. This inactivity increases the risk of recurrence and is exacerbated by chemotherapy side effects, such as severe fatigue and immunosuppression. Evidence indicates that physical exercise, particularly combined training (aerobic and anaerobic), can mitigate these effects, stabilizing physical fitness and improving quality of life. Despite its benefits, barriers such as the need to travel to specialized facilities, immunological vulnerabilities, and financial constraints hinder adherence to exercise programs. In this context, tele-exercise has emerged as a viable and alternative solution. Digital platforms enable the design and monitoring of safe and effective exercise programs at low cost for users. Studies with BC survivors have shown positive outcomes, which prompted our research team to conduct a pilot study. This study observed the benefits of tele-exercise in alleviating chemotherapy-related side effects and improving the functional capacity of BC patients. Although further research is necessary, tele-exercise appears to be a promising approach for integrating physical exercise into BC treatment, complementing medical protocols while enhancing adherence and quality of life. Nonetheless, challenges such as unequal access to technology and difficulties in remote monitoring must be addressed.

Keywords: *Breast Cancer; Tele-exercise; Quality of life; Functional capacity.*

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ABSTRACTS

Risk of work-related musculoskeletal disorders in healthcare professionals in the intensive care unit

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ABSTRACT

Work-Related Musculoskeletal Disorders (WMSDs) result from the exercise of a repetitive professional activity, overload and/or posture adopted during a prolonged period at work. Health professionals are exposed to ergonomic risks, which makes it urgent to assess body posture, using a validated instrument. There is no instrument to assess the risk of WMSDs translated and adapted to the Portuguese population, which is why it is necessary to identify the existence of these instruments in international literature. The Rapid Entire Body Assessment (REBA), developed and published by Sue Hignett and Lynn McAtamne in 2000, assesses body posture regarding the risk of musculoskeletal injuries through inadequate postures and allows the assessment of muscular activity caused by a static, dynamic posture or due to sudden or unexpected changes in posture, determining the level of injury risk, establishing the level of necessary action and the urgency of the intervention. Carry out the translation and cultural adaptation of the REBA instrument for the Portuguese population; Assess the risk of WMSDs in professionals from the Intensive Care Unit (ICU) of a Hospital Center in the Lisbon region. Methodological study of translation and cultural adaptation of the REBA Instrument into Portuguese following the recommendations of Beaton, Bombardier, Guillemin, & Ferraz: Translation; Synthesis; Back translation; Expert Committee Review and Pre-testing. Observational, cross-sectional and prospective study evaluating the risk of WMSDs in ICU professionals, through REBA, in the following activities: providing care at the patient's bedside, manual mobilization of loads and at the computerized workstation. With the translation of REBA and the resulting risk assessment, we intend to improve the ergonomics of healthcare professionals, intervene in risk factors, improve the quality of care provided, disseminate results and train other professionals.

Keywords: *Work-Related Musculoskeletal Disorders; Rehabilitation Nursing; Intensive Care Unit, Ergonomics.*

Early rehabilitation of individuals with acquired muscle weakness: A systematic review protocol

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ABSTRACT

Intensive care unit-acquired weakness (ICU-AW) is a common clinical complication, associated with secondary conditions related to critical illness and its treatments. Global incidence estimates vary from 24% to 65%, depending on population characteristics. The research question is: What are the effective interventions described in the scientific evidence for the early rehabilitation of individuals with ICU-acquired muscle weakness? Systematically review the scientific evidence on effective interventions for the early rehabilitation of individuals with ICU-acquired weakness. Systematic Review Protocol of Effectiveness, according to the Joanna Briggs Institute (3), registered on the Open Science Framework (DOI 10.17605/OSF.IO/8WCBU). Inclusion criteria were based on the PICO mnemonic (Population: Adults and elderly; Intervention: Effective interventions; Comparator: None; Outcomes: Indicators reflecting early rehabilitation). Primary studies will be considered, including randomized controlled trials and quasi-experimental studies, as well as observational studies of a quantitative nature. Search strategy: MEDLINE (via PubMed®), CINAHL Ultimate (via EBSCO Host®), Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, and Web of Science will be independently searched by two investigators using free terms and controlled vocabulary. The search will cover the last 10 years and will be limited to studies published in English, Portuguese, Spanish, and Italian. Relevant studies will also be identified by reviewing the reference lists of included articles. The characteristics of the included studies will be presented using a data extraction table (characterization, disciplinary area, objective, research design, sample, and implemented early interventions), summarized and related to the re-view question. This work seeks to expand nursing knowledge to deliver high-quality care, emphasizing the early rehabilitation of individuals with ICU-acquired weakness.

Keywords: *Rehabilitation Nursing; Muscle Weakness; Intensive Care Units; Systematic Review.*

Body composition and functionality in patients with psychotic disorders: The necessity of physical exercise

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ABSTRACT

Mental disorders account for 11.8% of the global burden of disease, of which 3% to 4% are psychotic disorders. These involve a loss of contact with reality, and people live 10 to 20 years less due to various preventable comorbidities (WHO, 2022). The aim of this study was to characterize the body composition and functionality of a sample of 22 patients (15 men and 7 women), aged between 23 and 59, with severe mental illness in a hospital. All the patients are medicated with prolonged-release injectable antipsychotics (TREAs) with different adverse effects. A sociodemographic questionnaire was used which included levels of physical activity, body composition (weight and % fat mass using a bioimpedance scale, height with a stadiometer and waist circumference) and functionality (handgrip, sit and stand test_30”). With regard to physical activity, 22.7% of patients didn't do any, 27.3% did it once a week, 36.4% did it twice a week and 13.6% did it three times or more. As for BMI, 27.2% were normal weight, 45.5% overweight and 27.2% obese. The average waist circumference was 102.92 (± 16.49) cm and the % fat mass were 30.94 (± 11.78). Regarding functionality, in the handgrip 31.8% showed weakness and 68.2% normal handgrip strength, and in the sit and stand test, the total average was 12.41 (± 3.81), with men showing an average of 12.60 (± 4.34) and women 12.00 (± 2.58). These results show that these patients do little physical activity, are overweight and obese, and have low levels of lower limb strength. It is therefore important to involve these patients in a physical exercise program to combat the side-effects of medication and improve their physical condition.

Keywords: *Mental health; Psychosis; Prolonged-release injectable antipsychotics; Comorbidities; Physical exercise.*

Cardiac rehabilitation in post-acute coronary syndrome: physical activity in Phase 2 and 3

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ABSTRACT

The cardiac rehabilitation program is a cost-effective therapeutic intervention, with class I-level A evidence, in post-acute coronary syndrome (ACS). It includes management and control of cardiovascular risk factors, physical activity (PA) counselling and prescription of exercise training. It is divided into phase 1 (inpatient), phase 2 (outpatient) and phase 3 (community maintenance). To assess PA levels in phases 2 and 3 of a post-ACS cardiac rehabilitation program. Retrospective study evaluating post-ACS patients who completed a phase 2 cardiac rehabilitation program in a hospital Cardiac Rehabilitation Unit between September 2017 and December 2023. Data were collected on sex, age, diagnosis, treatment and cardiovascular risk factors. The International Physical Activity Questionnaire short form (IPAQsf) Portuguese version was applied before starting phase 2 (T₀), at the end of phase 2 (T₁) and 3 months after the end of phase 2 – phase 3 (T₂). 167 patients, 82% male, 98.1% with acute myocardial infarction, 97.5% treated with coronary angioplasty, 61% with hypertension, 79.2% with dyslipidemia, 21.2% diabetic, 25.8% were ex-smokers and 25.8% were active smokers. Correlating the total IPAQsf (MET-minutes per week) scores of T₀, T₁ and T₂ using the Wilcoxon test, there is an increase in PA from T₀ to T₁ ($p < 0.001$), which remains during the phase 3, as there is no statistically significant difference between T₁ and T₂ ($p = 0.664$). Phase 2 of the cardiac rehabilitation program for post-ACS patients was effective in increasing PA levels, which were maintained during phase 3. Studies with longer follow-up are needed.

Keywords: *Acute coronary syndrome; Cardiac rehabilitation; Physical activity.*

Exploring rural-urban differences in mobility, executive and cognitive function among older adults

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ABSTRACT

Literature indicates that executive function, crucial for planning and problem-solving, declines with age, affecting mobility in older adults. Considering differences in lifestyle between older adults living in rural vs. urban areas, this study aimed to a) explore the differences in cognitive function, executive function, and mobility according to residential area; and b) explore how Localization residence affects the relationship between executive function and mobility. 63 older adults living in the community took part in this study: 39 composed the rural area group (RAG) (mean age 80.38±5.53 years, 94.4% female) and 30 composed the urban area group (UAG) (mean age 75.80±7.12 years, 43.3% female). Mobility was assessed using the Short Physical Performance Battery (SPPB). Executive function was evaluated with the Trail Making Test (TMT), and cognitive function through the Mini-Mental State Examination (MMSE). T-tests were used for group comparisons, and the relationship between variables using Pearson's correlation ($p < 0.05$). The RAG demonstrated greater balance (3.43 ± 0.73 vs 2.43 ± 1.19 ; $p < 0.001$) and faster sit-to-stand performance (2.43 ± 1.19 vs 3.75 ± 0.60 ; $p < 0.001$) than UAG. No significant differences were observed in walking speed, MMSE, and TMT. Among UAG, executive function exhibited a significant correlation with balance ($r = -0.545$, $p = 0.002$), sit-to-stand ability ($r = -0.527$; $p = 0.003$), and walking speed ($r = -0.409$; $p = 0.025$), while no correlation was observed in RAG. RAG exhibited greater mobility compared to their urban counterparts, suggesting increased engagement in physical activities, such as agricultural activities. The significant relationship between executive function and mobility observed in UAG suggests higher executive function stimulation in urban areas since moving to different places, such as going to work or shopping, requires better planning action. This study lays the groundwork for further investigation into the interaction between cognitive function, mobility, and living contexts, with the ultimate goal of informing effective interventions tailored to the specific needs of older adults.

Keywords: *cognitive function; physical function; rural area; urban area.*

Physical activity, anxiety, depression, and body image in trans individuals: an exploratory study

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ABSTRACT

Physical activity (PA), mental health, and body image are some important health topics in the transgender population that have been recently discussed and appear to play a crucial role in the quality of life of this population. However, despite the growing body of literature on transgender health, there exists a notable gap in a thorough and comprehensive characterization of transgender individuals, particularly concerning their satisfaction with body image, depressive and anxious symptoms, and engagement in physical activity. Therefore, this study aims to elucidate the complex interplay of these factors and their implications for the well-being of trans individuals. **Methods:** In a cross-sectional study, 75 Portuguese transgender individuals ($M=23.68$; $SD \pm 6.59$) were recruited to participate in this study. The participants completed three valid and reliable questionnaires related to the assessment of physical activity (IPAQ), depressive and anxious symptomatology (HADS) and satisfaction with body image (BISQp). **Results:** Trans individuals showed a total energy expenditure of 3316.40 METS, had scores above the midpoint especially for anxious symptoms, indicating a moderate level of symptomatology and low levels of satisfaction with body image. Satisfaction with body image was negatively associated with anxiety ($r=-0.441$; $p<0.01$) and depression symptomatology ($r=-0.600$; $p<0.01$). Additionally, satisfaction with body image explains 40% of the variance in depressive symptomatology and 24% of the variance in anxiety symptomatology among trans individuals. **Conclusions:** The implementation of inclusive programs that promote body acceptance and coping strategies, particularly within the context of physical exercise, may help alleviate distress related to body image dissatisfaction while also addressing underlying anxiety and depression symptoms.

Keywords: *physical activity; body image; anxiety; depression; transgender.*

Influence of practicing sports modalities on the quality of life and well-being of individuals with intellectual and developmental disabilities

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ABSTRACT

People with intellectual and developmental disabilities (IDD) tend to lead a sedentary lifestyle that negatively impacts their quality of life (QoL) and well-being. The aim of this study was to assess the influence of an intervention based on sports (one 60-minute session per week) for 36 weeks on the QoL and well-being of institutionalized people with IDD. The sample consisted of 36 participants with IDD, divided into two groups: (i) the experimental group (EG), with 23 participants ($M=37.26$; $SD=13.84$), and (ii) the control group (CG), composed of 13 people ($M=38.31$; $SD=14.22$). The variables of interest were assessed using the Personal Outcomes Scale, the Satisfaction with Life Scale and the Positive and Negative Affect Schedule. The analysis between groups was performed using the non-parametric Mann-Whitney U test, while comparisons between the different moments were made using the non-parametric Wilcoxon test. At the post-intervention moment, when comparing the CG with the EG, the EG showed significantly higher values in the domains of social inclusion ($p=0.02$; $\eta^2=-0.393$), emotional well-being ($p=0.04$; $\eta^2=-0.358$) and physical well-being ($p<0.01$; $\eta^2=-0.745$) of QoL, as well as in the variables satisfaction with life ($p<0.01$; $\eta^2=-0.538$) and positive affect ($p=0.01$; $\eta^2=-0.492$). The EG showed significant improvements in the domains of self-determination ($p=0.01$; $\eta^2=-0.540$), social inclusion ($p=0.01$; $\eta^2=-0.603$) and physical well-being ($p<0.01$; $\eta^2=-0.784$) of QoL, and in the variables life satisfaction ($p=0.02$; $\eta^2=-0.507$) and negative affect ($p<0.01$; $\eta^2=-0.628$) at the post-intervention moment. The results suggest that programs of this type can have a positive impact on the quality of life and well-being of people with IDD.

Keywords: *Intellectual and developmental disabilities; sport; quality of life; well-being.*

Physical fitness, motor competence, and quality of life in youth with IDD: Intervention program in the football modality

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ABSTRACT

Sedentary behavior is a characteristic of people with intellectual and develop-mental disabilities (IDD), and it has negative impact on the physical, mental, psychological health and quality of life of these people. The present study aims to analyze the effect of an 8-week intervention program based on the modality of soccer, on the level of physical ability, motor competence and quality of life of people with IDD. The sample, consisted of 27 participants with DID, aged between 17 and 54 years ($M=31.81\pm 11.50$) and then divided into experimental ($n=10$; $M=25,90\pm 8,02$) and control group ($n=17$; $M=31,29\pm 11,99$), both evaluated before and after the intervention using the following tests: handgrip strength using a dynamometer and the sit-and-stand test of the Fullerton test battery; Wall Drop Punt Kick Punt & Catch - WDPK&C and 3 subtests of the Motor Competence Assessment - MCA and Quality of Life, Personal Outcome Scale (RPE) – self-report. The results obtained show improvements in the variables: physical abilities – test: sit, stand; motor competence – lateral jump; Quality of Life – social participation domain, well-being domain and Global Id Index and motor competence – allowing us to state that the 8-week intervention pro-gram had an impact on the improvements observed. Therefore, we conclude that access to regular sports practice by people with DID, namely the practice of soccer, seems to have a positive effect on the variables of physical ability, motor competence and quality of life, and can contribute to the inclusion and participation of these people in society.

Keywords: *Physical Fitness; Motor Competence; Adapted Sport; Intellectual and Developmental Disabilities (DID); Quality of Life and Soccer.*

Enhancing health, quality of life, and well-being: The role of physical exercise in older adults

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ABSTRACT

Physical activity (PA) is crucial for older adults to maintain health, improve quality of life, and reduce the risk of chronic illnesses. PA supports mental health, emotional well-being, balance, cognitive function, and social engagement while lowering fall risk. Accessible and tailored programs encourage adherence, fostering a fulfilling and active lifestyle. This study aimed to confirm the health benefits of PA and its role in enhancing enjoyment and quality of life in older adults. A randomized controlled trial evaluated 124 participants (Exercise Group [EG]: 72.4±6.9 years; 68.4±14.2 kg; 1.57±0.08 m; Control Group [CG]: 73.2±5.8 years; 71.3±13.4 kg; 1.58±0.07 m; N=46). The six-month intervention involved twice-weekly sensorimotor training with progressive intensity. Body composition was measured using a scale and stadiometer (Seca 22, Hamburg, Germany), and BMI was calculated as weight/height². The International Physical Activity Questionnaire assessed PA levels, the Physical Activity Enjoyment Scale evaluated mental engagement, and the SF-36 questionnaire analyzed quality of life. Assessments were conducted at the baseline and after 24 weeks. Both groups demonstrated improved body composition following the intervention. The EG showed a significant increase in walking activity (min/week) with $\eta^2=0.148$ and $p=0.022$. After the 24-week intervention, both groups showed enhanced quality of life, PA levels, and body composition. The EG exhibited greater improvements than the CG, though overall changes were not statistically significant for most variables.

Keywords: *Health; Older people; Physical Activity; Quality of Life; Questionnaires.*

Impact of sensorimotor training on older people's physical capabilities

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ABSTRACT

The quality of life (QoL) of older adults is greatly impacted by physical activity (PA), which fosters strength, flexibility, balance, and coordination. Among these interventions, sensory-motor training is particularly effective in preserving functional independence and lowering the risk of falls, both of which are critical for aging in a healthy manner. To evaluate the impact of a sensorimotor training program on the physical capabilities of older adults. A total of 46 participants (72.40±6.88 years; 68.40±14.20 kg; 1.58±0.08 m) engaged in a 24-week sensorimotor training program, consisting of twice-weekly sessions. The program featured six circuits with eight exercises, adjusted for intensity over time. Physical abilities were assessed using the “Timed Up and Go” test for agility and speed and the Rikli and Jones battery for strength and flexibility. Data were collected pre- and post-intervention and analyzed using Jamovi software (v2.3.18). Paired Student's t-tests ($p < 0.05$) and Cohen's d effect size (ES) were used to evaluate changes. Between before and after the intervention, there were notable improvements in every variable. Flexibility, notably in the “reach behind the back” test using the left arm, had the greatest ES (ES=0.71). Sensorimotor training enhances physical skills such as strength, flexibility, and balance in older adults. Structured PA programs like this are vital for improving QoL, reducing injury risk, and promoting independence and healthy aging. These findings highlight the importance of continued development and implementation of targeted interventions for the elderly population.

Keywords: *Agility; Flexibility; Older people; Sensorimotor training; Strength.*

Perceived effort and pulmonary capacity of Portuguese Air Force aviation pilots after 12 weeks of workplace Yoga training

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ABSTRACT

Top performance in military aviation depends on maintaining adequate working capacity, even under adverse physical conditions during flight, such as G-forces and reduced oxygen levels. In the context of this study, the Borg CR10 scale provided insight into participants' perceived exertion, while spirometry values offered objective data on their lung capacity. The study assessed the impact of Ashtanga Vinyasa Yoga training on cadets at the Portuguese Air Force Academy (2021 and 2022 cohorts) to improve their effort tolerance and resilience to adverse flight conditions. A randomized clinical trial involved 18 students from the "Master's in Military Aeronautics: Pilot Aviator Specialization" course. The pilots were randomly assigned to either a yoga class group (intervention N=10) or a waitlist control group (control N=8). Perceived exertion was evaluated using the Borg scale, and lung capacity was measured through Forced Expiratory Volume in 1 second (FEV1%) using a spirometer, both before and after 12 weeks. Parametric and non-parametric tests were conducted using Jamovi software (version 2.3.26). The study was registered on April 19, 2023, at ClinicalTrials.gov: NCT05821270. A significant reduction in perceived exertion was observed in the yoga group ($p=0.015$), despite the introduction of more advanced postures and longer holding times in the yoga sessions over time. The yoga group also demonstrated increased lung capacity post-intervention ($p=0.017$), whereas no significant change was observed in the control group ($p=0.135$). With lower perceived exertion and improved lung capacity, pilots are better equipped to handle the physiological challenges of demanding flight maneuvers, such as the anti-G maneuver. Yoga training appears to offer benefits even for highly trained individuals.

Keywords: *Physical Conditioning; Physical Performance; Military Training; Military Health; Occupational Health.*

The effect of a multicomponent physical exercise program on institutionalized elderly individuals with hypertension

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ABSTRACT

This study aimed to analyze the effect of a multicomponent exercise program on the physical fitness of institutionalized elderly individuals with hypertension. To this end, a 12-week quasi-experimental study was conducted, in which three exercise sessions per week were held on non-consecutive days to evaluate the effect of the program on the physical fitness of institutionalized elderly individuals with hypertension. The final sample consisted of 21 individuals (Male=4, Female=17), who were physically inactive and had no pre-existing medical conditions that would prevent safe participation in the exercise program (i.e., severe hypertension, severe hyperthyroidism, stroke or heart attack in the previous month, aortic stenosis and/or heart failure, inability to walk, recent fracture). The participants had a mean age of 87.14 years (SD=7.07). The results showed significant differences in agility, upper body strength, and lower body strength ($p < 0.05$). These results may be explained by the combination of different types of exercise within the same session, as well as by the frequency and monitoring of training variables. This study seems to confirm the effectiveness of a multicomponent exercise program in improving the physical fitness of institutionalized elderly individuals with hypertension, highlighting the importance of including structured exercise programs in elderly care institutions as a means of controlling the effects of physical inactivity in this chronic condition.

Keywords: *physical fitness; institutionalized older adults; multicomponent exercise programs; hypertension.*

