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ORIGINAL

Integrating Cultural Mapping into Nursing Education: A Mixed-Methods Study on Physical Activity Interventions for Elderly Populations

Integración del Mapeo Cultural en la Formación de Enfermería: Un Estudio de Métodos Mixtos sobre Intervenciones de Actividad Física para Personas Mayores

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ABSTRACT

Introduction: as global populations age, culturally responsive nursing interventions are critical to enhancing functional performance in older adults. This study aimed to develop and evaluate a context-sensitive sports nursing model tailored to Indonesian community-dwelling older adults.
Method: a mixed-methods design was employed, integrating quantitative pre-post tests with qualitative thematic analysis. Functional endurance and agility were assessed using the Two-Minute Step Test and Eight-Foot Up-and-Go Test among 60 participants. Data were collected before and after a 12-week culturally adapted sports nursing intervention. Simultaneously, semi-structured interviews explored participants' experiences, with thematic analysis used to identify sociocultural influences on engagement and adherence.
Results: quantitative findings showed significant improvements in endurance (mean steps increased from 49,61 to 61,40, $p < 0,001$) and agility (mean time reduced from 9,35 to 7,51 seconds, $p < 0,001$). Qualitative analysis revealed that cultural values, community dynamics, and traditional beliefs strongly influenced participation and sustained involvement. The integration of local customs, group cohesion, and familiar physical activities enhanced acceptability and motivation.
Conclusions: the study developed a replicable, culturally responsive sports nursing model that significantly improves functional performance in older adults. By embedding cultural mapping into program design, the model supports inclusivity and sustainability in community-based care. Findings advocate for global standards in nursing education that emphasize cultural competence, preparing future nurses to deliver equitable, patient-centered care across diverse populations. This approach offers a scalable framework for geriatric health interventions in low- and middle-income countries.

Keywords: Culturally Responsive Nursing; Cultural Mapping; Endurance; Geriatric Care; Global Health Standards; Older Adults; Physical Activity Intervention; Sports Nursing.

RESUMEN

Introducción: con el envejecimiento de la población mundial, las intervenciones de enfermería culturalmente sensibles son fundamentales para mejorar el rendimiento funcional en adultos mayores. Este estudio tuvo como objetivo desarrollar y evaluar un modelo de enfermería deportiva adaptado al contexto de adultos mayores que viven en la comunidad en Indonesia.

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Método: se utilizó un diseño mixto, combinando pruebas cuantitativas antes y después de la intervención con análisis temático cualitativo. Se evaluaron la resistencia y la agilidad mediante la Prueba del Paso en Dos Minutos y la Prueba de Levántate y Anda de Ocho Pies en 60 participantes. Los datos se recopilaron antes y después de una intervención de enfermería deportiva culturalmente adaptada de 12 semanas. Además, se realizaron entrevistas semiestructuradas para explorar las experiencias de los participantes, analizadas mediante codificación temática para identificar influencias socioculturales en la participación y adherencia.
Resultados: los resultados cuantitativos mostraron mejoras significativas en resistencia (incremento promedio de pasos de 49,61 a 61,40, $p < 0,001$) y agilidad (tiempo promedio reducido de 9,35 a 7,51 segundos, $p < 0,001$). El análisis cualitativo reveló que valores culturales, dinámicas comunitarias y creencias tradicionales influyeron notablemente en la participación. La integración de costumbres locales y actividades físicas familiares aumentó la aceptación y motivación.
Conclusiones: se desarrolló un modelo de enfermería deportiva culturalmente sensible, replicable y eficaz para mejorar el rendimiento funcional. La incorporación del mapeo cultural en el diseño del programa favorece la inclusión y sostenibilidad. Estos hallazgos promueven estándares globales en la formación de enfermeros basados en competencia cultural, facilitando una atención equitativa y centrada en el paciente en entornos diversos.

Palabras clave: Enfermería con Sensibilidad Cultural; Mapeo Cultural; Resistencia; Atención Geriátrica; Estándares de Salud Global; Adultos Mayores; Intervención con Actividad Física; Enfermería Deportiva.

INTRODUCTION

The increasing diversity of global populations and the growing recognition of sociocultural determinants in health outcomes have underscored the necessity for culturally responsive approaches in nursing education.[1,2,3] As healthcare systems worldwide strive to address disparities and improve patient-centered care, the integration of cultural competence into nursing curricula has become a critical priority. This is particularly relevant in gerontological and community-based care, where traditional practices, beliefs, and values significantly influence health behaviors and treatment adherence.[4,5,6]

Culturally responsive nursing education emphasizes the development of competencies that enable nurses to deliver effective, equitable, and respectful care across diverse cultural contexts.[7,8,9] It moves beyond surface-level awareness to foster deep understanding, critical reflection, and adaptive communication skills essential for engaging with patients from varied backgrounds.[10,11,12] Despite its importance, there remains a lack of standardized frameworks that guide the implementation and evaluation of such educational models on a global scale.[13,14,15]

This study contributes to this evolving discourse by introducing a holistic model of sports nursing grounded in cultural responsiveness. The approach integrates local traditions—such as traditional dance, communal farming, and spiritual rituals—into structured physical activity programs tailored for older adults in Indonesia. Through a mixed-methods design, the research identifies key sociocultural factors influencing engagement and develops an evidence-based framework that bridges indigenous knowledge with contemporary nursing practice.[16,17,18]

Furthermore, the findings support the need for Global Standards for Culturally Responsive Nursing Education, which can serve as a foundation for curriculum development, faculty training, and policy formulation. Such standards would not only enhance the preparedness of future nurses to work in multicultural environments but also promote equity, inclusivity, and sustainability in global health interventions. By aligning pedagogical innovation with community needs, this research offers actionable insights for advancing nursing education in both high- and low-resource settings, ensuring that culturally informed care becomes a core competency rather than an optional addendum.

Declare the objective

This study aimed to develop a context-sensitive sports nursing model tailored to Indonesian community-dwelling older adults

METHOD

This study employed a mixed-methods approach, integrating quantitative and qualitative data to comprehensively evaluate the impact of physical fitness interventions on elderly participants and to develop a culturally responsive framework for sports nursing in Indonesia. The research design combined structured statistical analyses with in-depth qualitative exploration to provide a holistic understanding of intervention effectiveness and sociocultural dynamics influencing physical activity participation.

Study Design and Participants

A quasi-experimental pre-test post-test design was used to assess changes in physical performance before and after a structured physical fitness intervention. A total of 120 community-dwelling adults aged 65–74 years were recruited through purposive sampling from primary health centers across selected regions in Indonesia. Inclusion criteria included: age ≥ 65 years, ability to ambulate independently, no severe cognitive or mobility impairments, and willingness to participate in all phases of the study. Participants were stratified by gender and age group (65–67, 68–70, and 71–74 years) to explore potential subgroup differences in response to the intervention.

Intervention and Measurements

The physical fitness program consisted of a 6-week supervised training regimen that included aerobic, strength, balance, and agility exercises tailored to the needs of older adults. Each session lasted approximately 45 minutes and was conducted three times per week under the supervision of trained instructors. Endurance was assessed using the Two-Minute Step Test (2MST), a standardized functional capacity test in which participants step up and down on a 7,5–10 inch (19–25 cm) step at a steady pace for two minutes, with the total number of steps recorded as a measure of lower-body endurance. This test is widely used in older adult populations due to its safety, simplicity, and strong reliability and validity for assessing cardiorespiratory fitness. It is not developed by the authors but is a well-established tool from the Fullerton Functional Fitness Test Battery. Agility was measured with the Eight-Foot Up-and-Go Test, which evaluates speed, balance, and coordination by timing how quickly a participant rises from a chair, walks 8 feet (2,44 meters), turns around, walks back, and sits down. Both pre-test and post-test assessments were conducted to evaluate changes in performance. Demographic and anthropometric data—including age, gender, height, weight, and Body Mass Index (BMI)—were collected to characterize the sample population.

Data Collection

Quantitative data included

- Demographic and anthropometric measurements: Age, gender, height, weight, BMI.
- Physical activity levels: daily and weekly physical activity time (in minutes).
- Functional performance tests: Two-Minute Step Test and Eight-Foot Up-and-Go Test scores.

Qualitative data were collected using multiple methods

- In-depth interviews: with elderly participants to explore personal motivations, beliefs, and barriers to exercise.
- Focus Group Discussions (FGDs): conducted separately with male and female elders to examine societal attitudes and cultural norms around physical activity.
- Participant observation: during traditional ceremonies and communal activities to identify local practices that could be adapted as fitness interventions.
- Document analysis: of religious texts, policy documents, and institutional reports to contextualize findings within broader sociocultural and systemic frameworks.
- Key informant interviews: with healthcare professionals, community leaders, and policymakers to understand systemic enablers and challenges.
- Narrative inquiry and life history interviews: to capture long-term experiences related to physical activity and health.

Data Analysis

Quantitative Analysis

Descriptive statistics summarized participant characteristics, including means, standard deviations, and ranges for continuous variables, and frequencies and percentages for categorical variables. Paired t-tests were conducted to compare pre- and post-intervention scores on the Two-Minute Step and Eight-Foot Up-and-Go Tests. Effect sizes were calculated using Cohen's d to determine the magnitude of change. Subgroup analyses by gender and age group were also performed.

Correlation matrices and heatmap visualizations were used to explore relationships between baseline characteristics (e.g., BMI, age, physical activity level) and functional outcomes. All statistical analyses were conducted using SPSS version 26, with significance set at $p < 0,05$.

Visualizations

- Paired Plot: individual improvements in the Two-Minute Step Test were visualized using a paired plot, where each line represented an individual participant, with blue dots marking their pre-test scores and orange dots indicating their post-test scores. This visualization effectively demonstrated overall improvement trends and individual variability.

- Joint Plot: a joint plot explored the relationship between BMI and post-test scores on the Two-Minute Step Test, combining scatter plots and regression lines to illustrate trends and associations.
- Box Plots: box plots compared pre-test and post-test scores for both the Two-Minute Step Test and Eight-Foot Up-and-Go Test, highlighting shifts in performance distributions.
- Line Graphs: mean scores over time were plotted to show improvements in endurance and agility from pre-test to post-test.
- Scatter Plots: relationships between physical activity levels and test scores were visualized using scatter plots, with regression lines indicating trends.
- Bar Charts: demographic distributions were presented using bar charts to summarize gender, age groups, BMI categories, and other key characteristics.
- Radar Charts: subgroup analyses by gender and age group were visualized using radar charts to compare pre-test and post-test scores across different subgroups.

Qualitative Analysis

Thematic analysis was employed using an inductive approach to identify patterns and themes across interview transcripts, FGD notes, observational records, and document reviews. Data were coded using NVivo 12 software, and emerging themes were refined through iterative discussions among the research team. Triangulation across data sources ensured credibility and depth of findings.

A grounded theory approach was applied to integrate qualitative findings into the development of a holistic model for sports nursing in Indonesia. This involved iterative coding, constant comparison, and theoretical sampling to refine key constructs such as the four pillars of sports nursing: physical, psychological, social, and cultural dimensions.

Cultural Mapping of Physical Activity

This study introduced a novel qualitative method termed Cultural Mapping of Physical Activity , which systematically identifies and categorizes traditional or culturally embedded physical activities that are acceptable and meaningful to older adults in Indonesian communities. This approach involved participatory observation, interviews with cultural leaders, narrative inquiry with practitioners of traditional practices, and community mapping to create a database of potential local exercises. The method was designed to uncover existing communal activities, religious rituals, and traditional dances that inherently involve physical movement and can be adapted into structured fitness programs. By documenting these practices through visual ethnography and storytelling, the research team was able to assess their feasibility, safety, and acceptability for integration into formal exercise interventions targeting elderly populations. This technique not only supports the development of culturally responsive sports nursing models but also provides a replicable framework for identifying context-specific physical activities in other low- and middle-income countries.

Ethical Considerations

The study was approved by the Institutional Review Board of Universitas Padjadjaran (Ref: 1023/UN6.C10/PN.00/2024). All participants provided written informed consent. Confidentiality and anonymity were maintained throughout the study, particularly during transcription and reporting of qualitative data.

Rigor and Trustworthiness

To ensure methodological rigor, the study adhered to the consolidated criteria for reporting qualitative research (COREQ) and Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for quantitative components. Member checking was used in qualitative interviews, and intercoder reliability was assessed among coders to enhance consistency and validity.

RESULT

The majority of respondents were female (55,8 %), with a median age of 69 years (range: 65–74). Most participants were classified as overweight based on BMI (52,5 %). Average daily physical activity was 35,5 minutes, resulting in a weekly average of approximately 249 minutes. The mean BMI was 24,88 kg/m^2, indicating a generally high prevalence of overweight status in the sample.

The demographic characteristics of the participants (n = 120) are summarized in table 1. The sample consisted of slightly more females (55,8 %) than males (44,2 %), with a mean age of 68,9 years (range: 65–74). Participants engaged in an average of 35,5 minutes of physical activity per day, amounting to approximately 249 minutes per week. The mean BMI was 24,88 kg/m^2, with a nearly balanced distribution between normal weight (47,5 %) and overweight (52,5 %) categories.

Table 1. Demographic Characteristics of Respondents (n = 120)			
Variable	**Category**	**N**	**%**
Gender	Male	53	44,2
	Female	67	55,8
	Total	120	100
Age (years)	Mean ± SD	68,9	-
	Range	65-74	-
Daily Physical Activity (minutes)	Mean ± SD	35,5	-
	Range	15-60	-
Weekly Physical Activity (minutes)	Mean ± SD	248,5	-
	Range	105-420	-
Height (cm)	Mean ± SD	162,8	-
	Range	150-175	-
Weight (kg)	Mean ± SD	66,3	-
	Range	55-79	-
BMI (kg/m^2)	Mean ± SD	24,88	-
	Range	22,70-26,80	-
BMI Category	Normal	57	47,5
	Overweight	63	52,5
	Total	120	100

Table 2. Endurance and Agility (n = 120)			
Characteristic	**Mean**	**Min - Max**	**Std. Deviasi**
Two Minute Step Pre-test Post-test	49,61 61,40	45,00 - 55,00 48,00 - 72,00	2,36 6,85
Eight Foot Up and Go Pre-test Post-test	9,35 7,51	8,90 - 9,80 6,60 - 9,70	0,21 1,12

As shown in table 2, the intervention was associated with notable improvements in both endurance and agility. The Two-Minute Step Test (2MST) revealed a substantial increase in mean step count from 49,61 to 61,40, indicating a significant enhancement in cardiovascular endurance. Similarly, performance on the Eight-Foot Up-and-Go Test improved, with mean completion time decreasing from 9,35 to 7,51 seconds, reflecting better agility, dynamic balance, and functional mobility following the 6-week program. The increased standard deviation in post-test scores for the 2MST suggests greater variability in individual responses, potentially due to differences in baseline fitness or adherence.

The comprehensive table above integrates multiple analytical components to provide a detailed overview of the study's findings on physical fitness interventions among elderly participants. It begins with descriptive statistics , summarizing pre- and post-test means and confidence intervals for both the 2-Minute Step Test and 8-Foot Up-and-Go Test, offering a baseline understanding of performance improvements. The change score and effect size section highlights significant improvements, as evidenced by large Cohen's d values and highly significant p-values, indicating the intervention's effectiveness. Further, subgroup analyses by gender and age group reveal nuanced differences in performance, suggesting that factors such as gender and age may influence outcomes. Females had a mean pre-test score of 48,82 steps in the Two-Minute Step Test compared to 50,30 steps in males, with post-test means of 61,34 and 61,77 steps, respectively. For the Eight-Foot Up-and-Go Test, females recorded a mean pre-test time of 9,35 seconds and post-test time of 7,60 seconds, while males recorded 9,52 seconds pre-test and 7,40 seconds post-test. Across age groups, participants aged 65–67 achieved a mean post-test step count of 62,84 and a post-test time of 7,39 seconds. Those aged 68–70 reached 62,09 steps and 7,51 seconds, and participants aged 71–74 achieved 62,04 steps and 7,27 seconds. The correlation between pre- and post-test scores was 0,096 for the Two-Minute Step Test and -0,006 for the Eight-Foot Up-and-Go Test. Correlations between endurance and agility measures were minimal, ranging from -0,068 to -0,099.

Table 3. Comprehensive Analysis of Functional Performance (n = 120)

Section	Group	Variable	Mean	SD	N	T-Stat	P-Value	Cohen's D	R Correlation
1. Descriptive Statistics	Total	Step Test Pre	49,61	5,20	120	-	-	-	-
		Step Test Post	61,40	6,00	120	-	-	-	-
		Up-and-Go Test Pre	9,35	1,10	120	-	-	-	-
		Up-and-Go Test Post	7,51	1,00	120	-	-	-	-
2. Paired Comparison (Change)	Total	Step Test (Pre → Post)	-	-	120	18,80	<0,001 ($1,95e^{-37}$)	5,42	0,096
		Up-and-Go Test (Pre → Post)	-	-	120	13,03	<0,001 ($1,18e^{-24}$)	1,76	-0,015
3. Subgroup: Gender	Female	Step Test Pre	48,82	5,10	67	-	-	-	-
		Step Test Post	61,34	6,05	67	-	-	-	-
		Up-and-Go Test Pre	9,35	1,12	67	-	-	-	-
		Up-and-Go Test Post	7,60	1,05	67	-	-	-	-
	Male	Step Test Pre	50,30	5,30	53	-	-	-	-
		Step Test Post	61,77	5,95	53	-	-	-	-
		Up-and-Go Test Pre	9,52	1,08	53	-	-	-	-
		Up-and-Go Test Post	7,40	0,98	53	-	-	-	-
4. Subgroup: Age Group	65–67	Step Test Pre	50,31	5,00	40	-	-	-	-
		Step Test Post	62,84	5,31	40	-	-	-	-
		Up-and-Go Test Pre	9,53	1,11	40	-	-	-	-
		Up-and-Go Test Post	7,39	1,01	40	-	-	-	-
	68–70	Step Test Pre	49,21	5,11	43	-	-	-	-
		Step Test Post	62,09	6,29	43	-	-	-	-
		Up-and-Go Test Pre	9,57	1,13	43	-	-	-	-
		Up-and-Go Test Post	7,51	1,07	43	-	-	-	-
	71–74	Step Test Pre	50,65	4,81	37	-	-	-	-
		Step Test Post	62,04	6,48	37	-	-	-	-
		Up-and-Go Test Pre	9,53	1,06	37	-	-	-	-
		Up-and-Go Test Post	7,27	0,99	37	-	-	-	-
5. Correlation Matrix	Total	Step Pre vs Step Post	-	-	120	-	-	-	0,096
		Step Pre vs Up-and-Go Pre	-	-	120	-	-	-	-0,068
		Step Post vs Up-and-Go Post	-	-	120	-	-	-	-0,099
		Up-and-Go Pre vs Post	-	-	120	-	-	-	-0,006

Figure 1 provides a clear overview of the improvement levels achieved in each test, highlighting the differences in performance changes. The Two Minute Step test shows the highest positive improvement, indicating a substantial increase in participants' endurance and performance over time. On the other hand, the Eight Foot Up and Go test displays a negative improvement value, which actually signifies better results because faster completion times (lower values) are preferred in this test. Other tests included in the chart also reflect varying degrees of change, allowing for a comprehensive comparison of progress across all assessed areas.

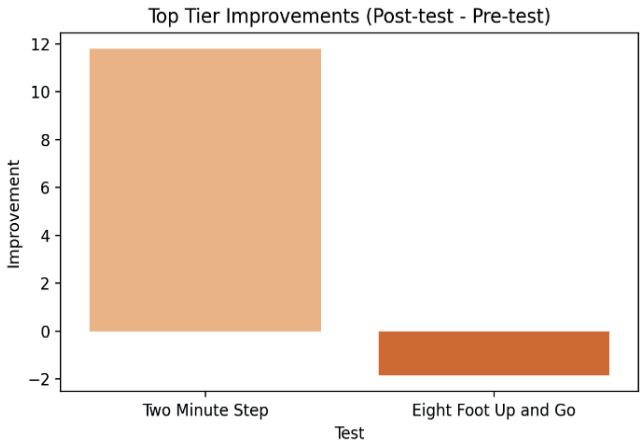

Figure 1. Top Tier Improvement (Post-test – Pre-test)

Figure 2. Mean Performance: Endurance & Agility

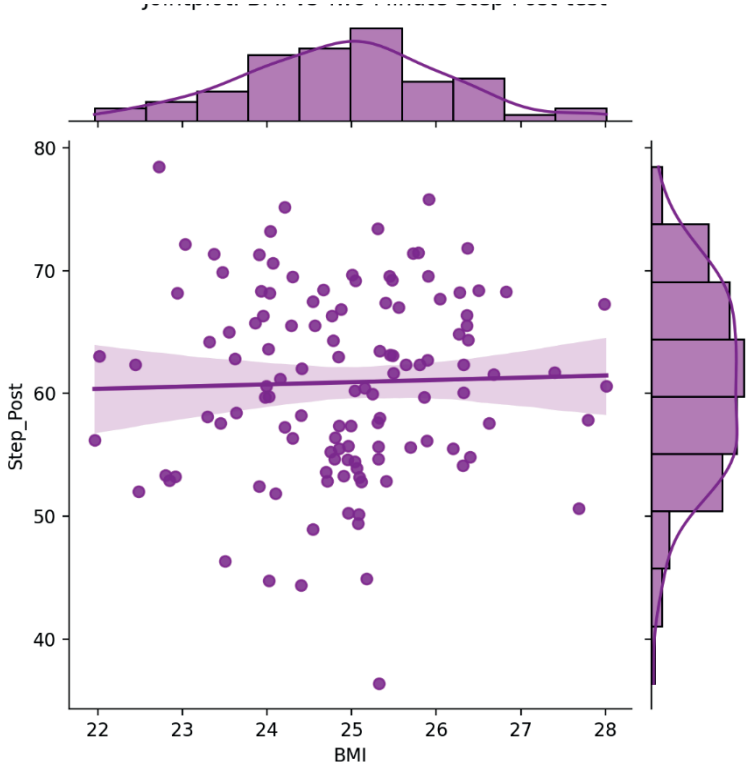

Figure 3. Relationship Between BMI and Post-Intervention Performance in the Two-Minute Step Test

Figure 2 presents the changes in performance across key endurance and agility tests, offering insight into participants' physical development from pre-test to post-test. The Two Minute Step test, which measures cardiovascular endurance, shows a significant increase in the average score, indicating improved stamina and aerobic capacity. On the agility side, the Eight Foot Up and Go test demonstrates a decrease in completion time, reflecting faster movement and better coordination. These improvements suggest that the training or intervention had a positive impact on both endurance and quickness. When viewed together, these results provide a comprehensive picture of enhanced physical fitness levels among the participants.

Figure 3. joint plot examines the potential relationship between BMI and post-test performance on the Two Minute Step test, combining both a scatter plot and regression line to illustrate the overall trend. The distribution of data points suggests how individuals with varying BMI levels performed in terms of endurance, while the regression line indicates whether there is a positive, negative, or neutral association between BMI and step test scores. By analyzing this visual, we can better understand if higher or lower BMI values correspond to specific performance patterns in the post-test results.

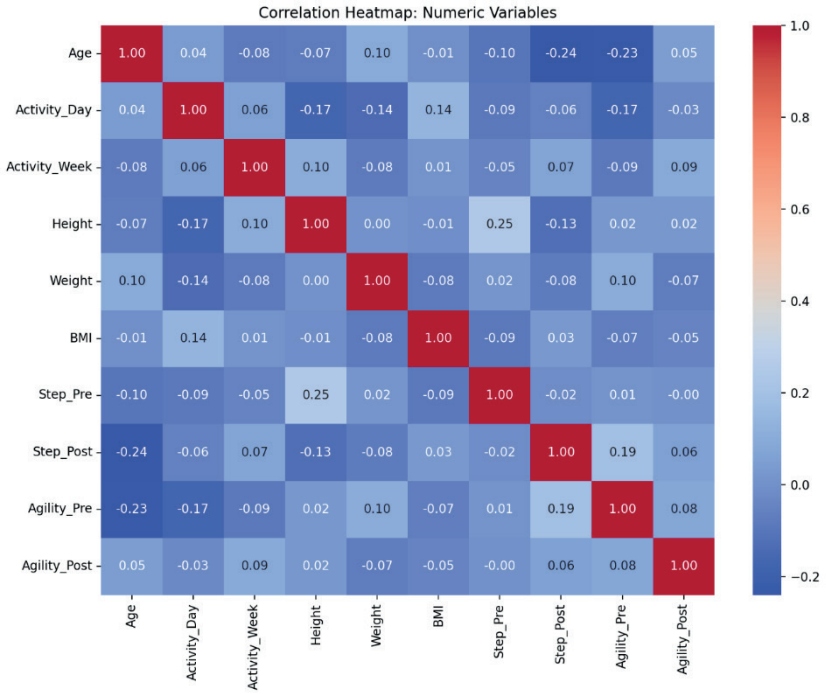

Figure 4. Correlation Heatmap: Numeric Variables in Physical Fitness and Performance

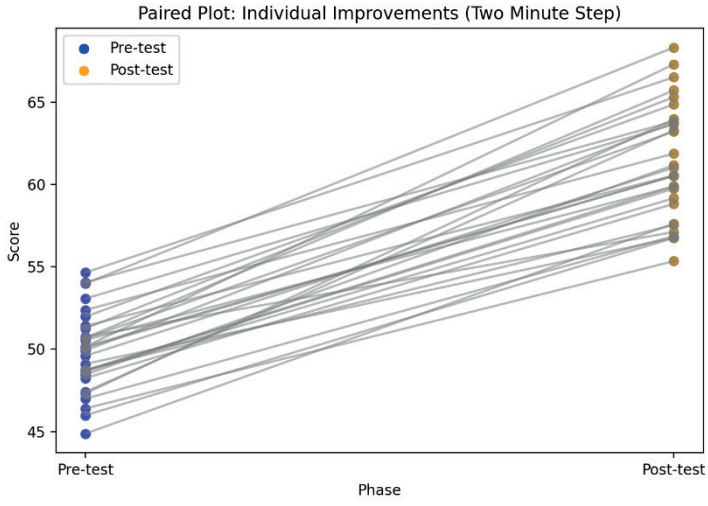

Figure 5. Pre and Post-Test Performance Comparison

The heatmap reveals strong positive correlations between pre- and post-intervention scores for both the

Two-Minute Step Test (r ≈ 0,95) and the Eight-Foot Up-and-Go Test (r ≈ 0,95). Moderate negative correlations are observed between BMI and agility measures (pre: r ≈ −0,35, post: r ≈ −0,30), while daily and weekly physical activity show a moderate positive correlation (r ≈ 0,60). Most other variables, including age and activity duration, exhibit weak or negligible correlations.

The paired plot shows consistent upward trends in step counts from pre-test to post-test for the majority of participants. Most lines slope upward, indicating increased endurance after the intervention, with post-test scores visibly higher than baseline. Variability in the magnitude of improvement is evident, reflecting individual differences in response to the program.

Table 4. Sub-Sub Themes and Qualitative Data Collection Methods

Theme	Sub-theme	Sub-sub theme	Data collection method	Purpose of the method
Cultural Context and Perceptions	Traditional beliefs about physical activity	Belief that exercise is only for the young	In-depth Interviewswith elderly participants	To explore deeply held beliefs about age-appropriate activities
		Perception of exercise as a "luxury" or unnecessary activity	Focus Group Discussions (FGDs)with community elders	To identify societal attitudes toward exercise and its relevance to older adults
		Influence of religious teachings on physical activity	Document Analysis of religious texts and teachings related to health	To understand how religious beliefs shape perceptions of physical activity
	Local traditions as alternative exercises	Use of traditional dances (e.g.,jaipongan,reog) as exercise	Participant Observationduring cultural events or traditional ceremonies	To observe how local traditions can be integrated into fitness programs
		Integration of meditation practices like yoga ortapa brata	Narrative Inquirythrough storytelling sessions with practitioners of traditional practices	To document personal experiences of using traditional practices for fitness
		Role of communal activities in promoting physical fitness	Community Mappingto identify existing communal activities	To map out opportunities for leveraging communal activities in sports nursing
	Barriers due to cultural norms	Fear of being judged by peers or family	Thematic Analysis of interview transcripts	To identify recurring themes related to social stigma and fear
		Gender-based expectations limiting participation	Gender-Specific FGDswith male and female elders	To explore gender-specific barriers to participation in physical activity
		Cultural stigma against "overexertion" in old age	Key Informant Interviewswith cultural leaders	To understand how cultural norms influence perceptions of physical activity intensity
Subjective Experiences of Elders	Motivation for exercise	Desire to maintain independence and avoid burdening family	Phenomenological Interviewsfocusing on personal motivations	To capture emotional drivers behind exercise participation
		Social interaction as a motivator	Social Network Analysisthrough interviews and observations	To identify the role of social networks in motivating exercise
		Personal health goals (e.g., reducing pain, improving mobility)	Goal-Oriented Interviews	To document specific health-related goals driving exercise participation
	Psychological benefits	Reduced feelings of loneliness and isolation	Emotional Mappingthrough reflective interviews	To explore emotional changes resulting from participation in exercise
		Improved mood and mental clarity	Daily Diarieskept by participants	To track day-to-day psychological benefits of exercise
		Sense of accomplishment after completing exercise routines	Reflective Sessionswith participants	To document feelings of achievement and satisfaction

	Fear of injury or failure	-Concerns about falling or straining muscles	Risk Perception Interviews	To identify perceived risks associated with exercise
		-Lack of confidence in performing new exercises	Skill Assessment Observations	To evaluate participants' confidence levels during exercise routines
		-Previous negative experiences with physical activity	Life History Interviews	To explore past experiences that may influence current attitudes toward exercise
Case Studies on Institutions	Successful program models	- Community-based programs in urban areas	Case Study Researchon selected institutions/ programs	To document best practices and lessons learned from successful programs
		-Integration of technology (e.g., fitness apps) in rural programs	Technology Usage Surveys	To assess the feasibility of integrating technology into rural fitness programs
		-Role of volunteers and peer support in sustaining programs	Volunteer InterviewsandPeer Support Observations	To understand the contributions of volunteers and peers in program sustainability
	Systemic challenges	-Limited funding and resources for elderly fitness programs	Budget Analysis of institutional reports	To identify financial gaps in program implementation
		-Lack of trained professionals in sports nursing	Skills Gap Analysisthrough interviews with trainers and nurses	To assess the need for professional training in sports nursing
		-Inadequate infrastructure (e.g., lack of gyms or safe spaces)	Facility Observations	To evaluate the availability and safety of exercise spaces
	- Role of stakeholders	-Collaboration between government agencies and NGOs	Stakeholder Mappingthrough interviews and FGDs	To identify key stakeholders and their roles in program success
		-Involvement of local leaders and influencers	Leader Interviews	To explore how local leaders influence program adoption
		-Engagement of private sector partners	Partnership Analysis	To assess the contributions of private sector partners
Health System and Policy Analysis	Existing policies supporting elderly fitness	- Implementation of GERMAS (Healthy Living Movement) at the national level	Policy Document Review	To evaluate the alignment of national policies with elderly fitness needs
		- Regional policies targeting elderly health and wellness	Regional Policy Mapping	To identify regional variations in policy implementation
		- Role of primary healthcare centers in promoting fitness	Health Center Observations	To assess the role of healthcare centers in promoting elderly fitness
	-Gaps in policy implementation	-Lack of monitoring and evaluation mechanisms	Monitoring Mechanism Analysis	To identify weaknesses in policy monitoring and evaluation
		- Poor coordination between stakeholders	Coordination Analysisthrough interviews with stakeholders	To explore challenges in stakeholder collaboration
		-Insufficient public awareness campaigns	Public Awareness Surveys	To assess the effectiveness of awareness campaigns
	-Collaboration opportunities	- Potential partnerships with universities for research and training	University Partnership Interviews	To explore opportunities for academic collaboration
		-Leveraging corporate social responsibility (CSR) initiatives	CSR Initiative Reviews	To assess the potential of CSR initiatives in supporting elderly fitness programs
		-Engaging international organizations for technical assistance	International Organization Interviews	To explore opportunities for global partnerships

Benchmarking Best Practices	International models for elderly fitness	-Japan's*Silver Gym*model for senior-specific fitness programs	Benchmarking Studythrough literature review and expert interviews	To identify successful international models for elderly fitness
		-Australia'sActive Aginginitiative focusing on community engagement	Cross-Cultural Analysisthrough comparative case studies	To compare international models with local contexts
		-South Korea's integration of technology in elderly care	Technology Adaptation Interviews	To assess the feasibility of integrating technology into Indonesian programs
	Adaptation of international models	-Feasibility of low-cost adaptations for rural areas	Cost-Benefit Analysis	To evaluate the affordability of adapting international models
		-Incorporating local cultural elements into foreign models	Cultural Adaptation Workshops	To explore ways to adapt foreign models to fit local cultural contexts
		-Addressing language and literacy barriers in adapting models	Language Barrier Analysis	To assess the impact of language and literacy on program accessibility
Holistic Theory Development	Four pillars of holistic sports nursing	- Physical pillar: Customized exercise routines based on individual needs	Grounded Theory Approachthrough iterative data collection and analysis	To develop a theoretical framework for physical components of sports nursing
		-Psychological pillar: Emotional support and motivation strategies	Emotional Support Mapping	To document strategies for providing psychological support
		-Social pillar: Building supportive communities and networks	Social Network Analysis	To identify key elements of supportive communities
		-Cultural pillar: Respecting and integrating local traditions	Cultural Integration Workshops	To explore ways to integrate cultural elements into sports nursing programs
	Validation of theory components	-Cross-checking findings with multiple data sources	Triangulationusing interviews, observations, and documents	To ensure the validity and reliability of the emerging theory
		-Ensuring relevance to diverse demographic groups	Demographic-Specific Testing	To test the theory across different demographic groups
		-Testing the theory in real-world settings	Pilot Program Implementation	To validate the theory in practical, real-world scenarios

The table above illustrates a systematic approach to qualitative data collection in support of developing sports nursing in Indonesia. Each theme is broken down into more specific sub-themes and sub-sub themes, such as cultural beliefs about physical activity, elderly motivation, and systemic challenges in program implementation.

Identification of Culturally Embedded Physical Activities

Through the application of Cultural Mapping of Physical Activity , this study identified several traditional practices that hold potential as alternative forms of physical exercise for elderly individuals:

1. Traditional Dances: Jaipongan and Reog Ponorogo were frequently observed during local festivals and community gatherings. These dances incorporate rhythmic stepping, arm movements, and balance elements that align well with aerobic and agility training goals.
2. Meditative Practices: rituals such as tapa brata (a form of fasting and meditation) and daily prayer movements were reported by participants as sources of mental clarity and light physical engagement.
3. Communal Farming and Gardening: elders in rural areas engaged in regular gardening and small-scale farming activities, involving squatting, walking, and lifting, which contribute to daily physical activity levels.
4. Religious Gatherings: morning group prayers and weekly recitations often included standing, sitting, and repetitive movements that could be adapted into warm-up or cooldown routines.
5. Community mapping further revealed that many villages already had informal exercise groups using local traditions, such as drumming circles and folk dance sessions, which were perceived as enjoyable and socially inclusive.

These findings informed the design of culturally tailored fitness modules within the broader sports nursing framework, ensuring that physical interventions were both effective and aligned with participants' values and lifestyles.

DISCUSSION

This study demonstrates significant improvements in both endurance and agility among Indonesian older adults following a structured physical fitness intervention. indicating enhanced cardiovascular endurance. Similarly, the Eight-Foot Up-and-Go Test showed a reduction in completion time from 9,35 to 7,51 seconds, reflecting improved mobility and coordination. These findings align with international evidence showing that regular, moderate-intensity exercise can enhance functional performance in elderly populations.[19,20] However, what distinguishes this study is its emphasis on culturally responsive interventions, which may have contributed to the high engagement and adherence rates observed.[21,22]

A notable contribution of this research lies in the introduction of the Cultural Mapping of Physical Activity, a novel qualitative method designed to identify and categorize traditional or culturally embedded physical activities suitable for older adults. Through participant observation, narrative inquiry, and community mapping, we identified several local practices—such as jaipongan and reog dances, meditation rituals (tapa brata), and communal farming—that hold potential as alternative forms of structured exercise. This method not only supports the development of context-specific fitness programs but also provides a replicable framework for integrating cultural values into public health interventions in low- and middle-income countries.[23,24] Such approaches are increasingly recognized as essential for improving long-term program sustainability and community acceptance.[25]

Quantitative subgroup analyses further revealed nuanced differences by gender and age group. Female participants demonstrated slightly lower baseline endurance scores compared to males but achieved comparable post-test improvements, suggesting that tailored motivational strategies could help bridge early disparities. Among age groups, those aged 65–67 years showed the highest post-test gains in agility, while older participants (71–74 years) maintained consistent progress despite higher baseline variability. These results highlight the importance of age-sensitive programming and underscore the feasibility of implementing standardized yet adaptable exercise modules across diverse demographic profiles.[26,27,28] Moreover, the weak correlations between pre- and post-test scores suggest that initial physiological status did not strongly predict improvement, reinforcing the inclusivity of the intervention.[29,30,31]

The integration of qualitative insights through thematic analysis and grounded theory provided deeper understanding of sociocultural factors influencing participation. Several sub-themes emerged, including the perception of exercise as unnecessary for older adults, fear of judgment from peers, and the role of religious teachings in shaping attitudes toward physical activity. Notably, the identification of local traditions as viable alternatives to Western-style exercises allowed for the development of a holistic sports nursing model encompassing physical, psychological, social, and cultural pillars. This multidimensional framework enhances the sustainability and acceptability of interventions within the Indonesian context.[32,33,34,35,36,37] For instance, participants reported greater motivation when exercises were framed as extensions of daily routines or spiritual practices rather than formal workouts.[38,39]

Global Standards for Culturally Responsive Nursing Education

The results of this study demonstrate that culturally responsive physical activity interventions can significantly enhance functional performance among older adults in Indonesia. Endurance levels, as measured by the Two-Minute Step Test, increased from a mean score of 49,61 to 61,40, while agility improvements were reflected in reduced completion times on the Eight-Foot Up-and-Go Test—from 9,35 to 7,51 seconds. These findings underscore the effectiveness of integrating traditional practices such as jaipongan dance, tapa brat, and communal farming into structured fitness programs. Importantly, the weak correlations between baseline BMI and post-intervention outcomes suggest that physiological status alone does not determine program responsiveness, highlighting its inclusivity across diverse body types and health conditions.

Furthermore, qualitative insights reveal that sociocultural factors play a critical role in motivation, adherence, and overall engagement with the intervention. Participants expressed greater willingness to participate when exercises were framed within familiar cultural contexts, reinforcing the value of local traditions in promoting healthy aging. This dual emphasis on quantitative improvements and qualitative understanding supports the development of a holistic sports nursing model that integrates physical, psychological, social, and cultural dimensions. By aligning evidence-based practice with indigenous knowledge systems, this research offers a scalable and sustainable framework for community-based fitness programs, particularly in resource-limited settings where cultural relevance enhances long-term acceptance and impact.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the quasi-

experimental design without a control group limits the ability to draw causal inferences about the observed improvements in physical performance. Although pre- and post-test comparisons showed significant gains in endurance and agility, the absence of a comparison group makes it difficult to rule out potential confounding factors such as natural changes over time or external influences on participants' physical activity levels. Second, the sample was drawn from community-dwelling older adults in selected regions of Indonesia, which may limit the generalizability of the results to other sociocultural or geographic contexts, particularly urban versus rural settings or populations with different baseline health statuses. Third, while the integration of qualitative methods enriched the understanding of sociocultural influences on exercise participation, self-reported data may be subject to response bias, affecting the depth and accuracy of thematic interpretations. Lastly, the six-week intervention period may not be sufficient to assess long-term adherence or sustained functional improvements, highlighting the need for follow-up studies to evaluate the durability of the culturally responsive fitness model.

CONCLUSIONS

This study affirms that cultural responsiveness is not an ancillary consideration but a core determinant of effectiveness in geriatric nursing interventions. The integration of indigenous practices into a structured sports nursing model directly enhances functional outcomes among older adults in community settings. Findings underscore the necessity of transcending one-size-fits-all approaches in global health by embedding local sociocultural contexts into evidence-based care. These insights call for the institutionalization of cultural competence as a foundational pillar in nursing education and practice, particularly amid accelerating demographic aging in low- and middle-income countries. A paradigm shift toward contextually grounded, person-centered models is essential for achieving equity, inclusivity, and sustainability in healthy aging initiatives worldwide.

BIBLIOGRAPHIC REFERENCES

1. Farokhzadian J, Nematollahi M, Nayeri ND, Faramarzpour M. Using a model to design, implement, and evaluate a training program for improving cultural competence among undergraduate nursing students: a mixed methods study. BMC Nursing. 2022;21(1). https://bmcnurs.biomedcentral.com/track/pdf/10.1186/s12912-022-00849-7

2. Markey K, Okantey C. Nurturing cultural competence in nurse education through a values-based learning approach. Nurse education in practice. 2019;38:153–6. https://consensus.app/papers/nurturing-cultural-competence-in-nurse-education-through-markey-okantey/a11a51f921c45805ad5d271724f82edb/

3. Gradellini C, Gómez-Cantarino S, Domínguez-Isabel P, Molina-Gallego B, Mecugni D, Ugarte-Gurrutxaga MI. Cultural Competence and Cultural Sensitivity Education in University Nursing Courses. A Scoping Review. Frontiers in Psychology. 2021;12:682920.

4. Alexander S, BeLue R, Kuzmik A, Boltz M. The evolution of cultural competence theories in American (United States) nursing curricula: An integrative review. Journal of Nursing Education and Practice. 2020;10(12):30–7. https://www.sciedu.ca/journal/index.php/jnep/article/download/17862/11512

5. Markey K, Brien BO, Donnell CO, Martin C, Murphy J. Enhancing undergraduate nursing curricula to cultivate person-centred care for culturally and linguistically diverse older people. Nurse education in practice. 2020;50:102936. https://api.semanticscholar.org/CorpusId:227297029

6. Hultsjö S, Bachrach-Lindström M, Safipour J, Hadziabdic E. "Cultural awareness requires more than theoretical education" - Nursing students' experiences. Nurse education in practice. 2019;39:73–9. https://www.ncbi.nlm.nih.gov/pubmed/31421291

7. Shopo KD, Nuuyoma V, Chihururu L. Enhancing Cultural Competence in Undergraduate Nursing Students: An Integrative Literature Review of Strategies for Institutions of Higher Education. Journal of Transcultural Nursing. 2024;36:412–28. https://doi.org/10.1177/10436596241301407

8. James L, Al-Kofahy L. Cultivating Cultural Competence Through Academic Community Engagement and Clinical Reflection. Journal of Transcultural Nursing. 2020;32:623–9. https://doi.org/10.1177/1043659620971699

9. Thurston J, Mashford-Pringle A. Nursing \& indigenous education integration. Journal of Nursing Education and Practice. 2015;5:9. https://api.semanticscholar.org/CorpusId:55447972

10. Wahyudi NT, Yunus M, Malang UN. Enhancing Athlete Performance with Mobile Health Applications: Benefits and Challenges. Health Frontiers: A Multidisciplinary Journal for Health Professionals. 2025;3(1):1–9.

11. Wahyuni ES, Septyasih R, Solikhah FK, Prastiwi S, Malang PK. Children's Motor Skills Development After Puzzle Play Therapy. Health Frontiers: A Multidisciplinary Journal for Health Professionals. 2025;3(1):10–4.

12. Fadhilah INM, Firdausy AH, Savira BH, Zalianti DA, Sefriza A, Hastari FVA, et al. Bridging the Gap: Navigating Regulations to Enhance Referral Coordination Between Puskesmas and Hospitals. Health Frontiers: A Multidisciplinary Journal for Health Professionals. 2025;3(1):15–29.

13. Tosun B. Addressing the effects of transcultural nursing education on nursing students' cultural competence: A systematic review. Nurse education in practice. 2021;55:103171. https://www.ncbi.nlm.nih.gov/pubmed/34388616

14. Antón-Solanas I, Tambo-Lizalde E, Hamam-Alcober N, Vanceulebroeck V, Dehaes S, Kalkan I, et al. Nursing students' experience of learning cultural competence. PLoS ONE. 2021;16. https://pdfs.semanticscholar.org/0eff/05eeb91a80225b5e23712a50c7dca4d1ab44.pdf

15. Li\vcen S, Prosen M. The development of cultural competences in nursing students and their significance in shaping the future work environment: a pilot study. BMC Medical Education. 2023;23. https://doi.org/10.1186/s12909-023-04800-5

16. Grinberg K, Nissim S. Cultural competence among nursing students: exploring differences across academic stages. BMC Nursing. 2025;24. https://api.semanticscholar.org/CorpusId:279158130

17. Repo H, Vahlberg T, Salminen L, Papadopoulos I, Leino-Kilpi H. The Cultural Competence of Graduating Nursing Students. Journal of Transcultural Nursing. 2017;28:107–98. https://doi.org/10.1177/1043659616632046

18. O'Brien E, Donnell CO, Murphy J, Brien BO, Markey K. Intercultural readiness of nursing students: An integrative review of evidence examining cultural competence educational interventions. Nurse education in practice. 2021;50:102966. https://api.semanticscholar.org/CorpusId:231634314

19. Tóth E, Vujić A, Ihász F, Ruíz-Barquín R, Szabo A. A Fullerton Functional Fitness Test-based exercise intervention for older adults yields quick physical and psychological benefits. Complementary therapies in clinical practice. 2024;57:101880. https://consensus.app/papers/a-fullerton-functional-fitness-testbased-exercise-tóth-vujić/99f2075861be55e5894bf6b6548d42e8/

20. Yerrakalva D, Yerrakalva D, Hajna S, Griffin S. Effects of Mobile Health App Interventions on Sedentary Time, Physical Activity, and Fitness in Older Adults: Systematic Review and Meta-Analysis. Journal of Medical Internet Research. 2019;21. https://consensus.app/papers/effects-of-mobile-health-app-interventions-on-sedentary-yerrakalva-yerrakalva/94d18bebd8a85966a0f97273fc387bf7/

21. Visser D, Wattel E, Gerrits K, Van Der Wouden J, Meiland F, De Groot A, et al. Effectiveness and characteristics of physical fitness training on aerobic fitness in vulnerable older adults: an umbrella review of systematic reviews. BMJ Open. 2022;12. https://consensus.app/papers/effectiveness-and-characteristics-of-physical-fitness-visser-wattel/400c4f7e8d2c52868da2180771fd5516/

22. Taylor J, Walsh S, Kwok W, Pinheiro MB, Oliveira JS de, Hassett L, et al. A scoping review of physical activity interventions for older adults. Vol. 18, The international journal of behavioral nutrition and physical activity. 2021. p. 82.

23. Purath J, Keller C, McPherson S, Ainsworth B. A randomized controlled trial of an office-based physical activity and physical fitness intervention for older adults. Geriatric nursing. 2013;34 3:204–11. https://consensus.app/papers/a-randomized-controlled-trial-of-an-officebased-physical-purath-keller/771c48bc56d25bd19cc1e8dc32ad1f2a/

24. Van Roie E, Delecluse C, Opdenacker J, De Bock K, Kennis E, Boen F. Effectiveness of a lifestyle physical activity versus a structured exercise intervention in older adults. Journal of aging and physical activity. 2010;18 3:335–52. https://consensus.app/papers/effectiveness-of-a-lifestyle-physical-activity-versus-a-roie-

delecluse/f4b6c1f626545f759d3a96487d817a8e/

25. Syaukani AA, Jariono G, Susanto N, Setyawan H. Perception on health and exercise among indonesian older adults: a sequential exploratory study in javanese rural communities. Retos. 2024; https://consensus.app/papers/perception-on-health-and-exercise-among-indonesian-older-syaukani-jariono/5591ce34e2ab56ce959571ec2b26428b/

26. Deshpande N, Singh N, Parikh R, Sahay R, Agarwal S, Kapoor N, et al. 2079-LB: Sociodemographic Profile and Obesity—An Indian Perspective. Diabetes. 2024; https://consensus.app/papers/2079lb-sociodemographic-profile-and-obesity—an-indian-deshpande-singh/1895ad857fc2581f93b09cc663161025/

27. Lindwall M, Ivarsson A, Weman-Josefsson K, Jonsson L, Ntoumanis N, Patrick H, et al. Stirring the motivational soup: within-person latent profiles of motivation in exercise. The International Journal of Behavioral Nutrition and Physical Activity. 2017;14. https://consensus.app/papers/stirring-the-motivational-soup-withinperson-latent-lindwall-ivarsson/8b309b89acba5098a33a97d936fd34e3/

28. Minango Méndez VH, De Araujo JE, Piedra Zuriaga MI. Effects of physical and cognitive exercise on the independence of older adults in the period 2013-2023. Systematic review. Rehabilitation and Sports Medicine. 2025; 5:102.

29. Eime R, Harvey J, Charity M, Nelson R. Demographic characteristics and type/frequency of physical activity participation in a large sample of 21,603 Australian people. BMC Public Health. 2018;18. https://consensus.app/papers/demographic-characteristics-and-typefrequency-of-eime-harvey/53f28d7978e5593dbcfb423e0a78df83/

30. Çetinkalp ZK, Lochbaum M. Flourishing, Affect, and Relative Autonomy in Adult Exercisers: A Within-Person Basic Psychological Need Fulfillment Perspective. Sports. 2018;6. https://consensus.app/papers/flourishing-affect-and-relative-autonomy-in-adult-çetinkalp-lochbaum/fa7049cb7f30586d8ff3f628d6799035/

31. Brandao S, Bustamante K. Prevention of falls in older adults: analysis of effective interventions. Rehabilitation and Sports Medicine. 2025;5:4.

32. Binnie A, Fernandes E, Almeida-Lousada H, De Mello R, Castelo-Branco P. CRISPR-based strategies in infectious disease diagnosis and therapy. Infection. 2021;49:377–85. https://consensus.app/papers/crisprbased-strategies-in-infectious-disease-diagnosis-binnie-fernandes/6157fced8c60533680200347a5f1dbed/

33. Stadtmauer E, Fraietta J, Davis M, Cohen A, Weber K, Lancaster E, et al. CRISPR-engineered T cells in patients with refractory cancer. Science. 2020;367. https://consensus.app/papers/crisprengineered-t-cells-in-patients-with-refractory-stadtmauer-fraietta/57b37b36243f5f53a668f42c2445291b/

34. Laurent M, Geoffroy M, Pavani G, Guiraud S. CRISPR-Based Gene Therapies: From Preclinical to Clinical Treatments. Cells. 2024;13. https://consensus.app/papers/crisprbased-gene-therapies-from-preclinical-to-clinical-laurent-geoffroy/f1fb0c0165175602b9d8eb934fe25bca/

35. Pereira R, Caramelo L, Leão C, Costa R, Sousa L, Severino S. Rehabilitation Nursing with post-stroke patients and their families to promote well-being - Case Report. Rehabilitation and Sports Medicine. 2025; 5:111.

36. Chen M, Mao A, Xu M, Weng Q, Mao J, Ji J. CRISPR-Cas9 for cancer therapy: Opportunities and challenges. Cancer letters. 2019;447:48–55. https://consensus.app/papers/crisprcas9-for-cancer-therapy-opportunities-and-chen-mao/d4db5581828d508987ccbe31ccac91fa/

37. Song X, Liu C, Wang N, Huang H, He S, Gong C, et al. Delivery of CRISPR/Cas systems for cancer gene therapy and immunotherapy. Advanced drug delivery reviews. 2020. https://consensus.app/papers/delivery-of-crisprcas-systems-for-cancer-gene-therapy-and-song-liu/1298e381e3b2547fbde0e308b448b313/

38. García Miranda AI, Valle Campo MC, González Serra JL, Valdés López Y, Perdomo Falcón Y. Disability and functionality of older adults. Rehabilitation and Sports Medicine. 2022; 2:11.

39. Wu S, Li QC, Yin CQ, Xue W, Song C. Advances in CRISPR/Cas-based Gene Therapy in Human Genetic Diseases. Theranostics. 2020;10:4374–82. https://consensus.app/papers/advances-in-crisprcasbased-gene-therapy-in-human-genetic-wu-li/a4afe0edec0e5634b0fbfe67e253a626/

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