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Original Research Article

Designing a tool to measure the level of deconditioning in hospitalized elderly patients

Sobiya Desai[1], Kusha Gherwara[1], Sawani Aphale[1], Sandeep Shinde[1]*, Poonam Misal[1]

[1]Dept. of Musculoskeletal Sciences, Krishna College of Physiotherapy, Krishna Vishwa Vidyapeeth, Deemed to Be University, Karad, Maharashtra, India

Abstract

Background: Extended hospital stays can cause severe deconditioning in elderly individuals, which may impact their general health and physical function. This research evaluates how successfully a therapeutic reconditioning program works to reduce deconditioning in elderly hospital patients when compared to traditional functional bed transition training.

Objectives: The study's objective was to design a tool that measures multiple levels of deconditioned hospitalized elderly patients and to validate the tool on hospitalized elderly patients.

Materials and Methods: Two groups of 262 elderly patients (60 years of age and older) were recruited and randomized to receive routine functional bed transition training (Group A) (n=131) and a gradual therapeutic reconditioning treatment (Group B) (n=131) over a four-week period. Prior to and following the intervention, 5 domains of physical function were assessed using the Deconditioning Assessment Tool for Hospitalized Elderly Patients (DAT-HEP) in order to validate the tool.

Results: On every outcome metric, both groups showed improvements. In contrast to Group A (conventional group), Group B (experimental group) showed much larger improvements in cardiovascular health, balance and mobility, muscle strength, endurance, and functional independence ($p < 0.0001$).

Conclusion: A new assessment tool, DAT-HEP, was developed in this study to evaluate deconditioning in hospitalized elderly patients. It proved to be a reliable and effective assessment tool for evaluating and tracking deconditioning in hospitalized elderly patients. Its clinical application was validated through extensive literature review and expert consultations, inter-rater reliability testing, and correlation with current tools.

Keywords: Hospital-acquired deconditioning, Geriatric patients, Assessment tool, Physical function, Balance, Functional independence.

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1. Introduction

According to the United Nations, the number of those over 65 will reach almost 1.5 billion by 2050, making the aging population an increasing demographic globally.[1] The substantial rise in the number of elderly people has important ramifications for medical systems, particularly in relation to hospitalized patient care. The phenomena of deconditioning stand out as a crucial concern among the many difficulties encountered in geriatric care. Deconditioning, which is the physiological deterioration brought on by bed rest, inactivity, or a sedentary lifestyle, can seriously harm older persons by causing functional losses in strength, movement, and general independence.[2] This tendency is especially noticeable in older patients, who may see daily muscle strength decreases of 2–5% while in the hospital.[3] This increases the risk of falls, fragility, and extended recovery times.[4]

Hospital-acquired deconditioning (HAD) is linked to negative outcomes like reduced quality of life, increased readmission rates, and lengthier hospital stays, which emphasizes how urgent it is to address the issue.[5] According to studies, the possibility of developing problems after hospitalization is 60 times greater for senior citizens

*Corresponding author: Sandeep Shinde
Email: drsandeepshinde24@gmail.com

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compared to those who are not hospitalized.[6] Additionally, deconditioning might have irreversible repercussions if focused remedies are not implemented quickly. Therefore, identifying at-risk patients early in their hospital stay and putting in place prompt reconditioning programs depend on the creation of an efficient measuring instrument.

Currently, no standardized physiotherapy-specific tool exists to effectively measure the level of deconditioning in hospitalized elderly patients. Existing assessment methods often focus on isolated aspects such as muscle strength or gait speed but fail to capture the multifaceted nature of deconditioning to provide a comprehensive evaluation of functional decline.[7] This assessment gap makes it more difficult for physiotherapy professionals to accurately track patients' development and modify interventions as necessary. In order for medical professionals to detect deconditioning early and apply suitable reconditioning techniques, a thorough evaluation tool should cover a variety of physical function dimensions, such as mobility, strength, balance, activities of daily living (ADLs), and cardiovascular status.

In response to these difficulties, this study attempts to design a novel tool that accurately measures the level of deconditioning in hospitalized elderly patients. Evidence-based procedures and the body of research on deconditioning evaluations will serve as the foundation for the suggested tool. The tool will enable routine monitoring during a patient's hospital stay by incorporating validated measurement items that represent important facets of physical function. In addition to improving the detection of deconditioning, this proactive strategy will facilitate the execution of customized reconditioning regimens catered to the unique requirements of every patient. In addition to improving overall patient quality of life, efficient management of hospital-acquired deconditioning can lower healthcare expenditures related to extended hospital stays and readmissions. As a result, this initiative is in line with current healthcare priorities that center on improving health outcomes through focused treatments and optimizing care for older person.

A thorough assessment will be carried out both before to and following the implementation of treatment protocols for the purpose of determining the validity and reliability of the novel measurement tool created to evaluate deconditioning in hospitalized elderly patients. A thorough analysis of the tool's ability to record alterations in physical function that can be linked to the reconditioning efforts will be made easier by this two-phase approach. Future clinical guidelines on managing hospital-acquired deconditioning will be informed by the expected findings, which will additionally enhance our comprehension of deconditioning dynamics and open the door for creative interventions targeted at assisting older citizens in regaining their functional independence after hospitalization.

2. Materials and Methods

2.1. Study design and setting

A pre- and post-test approach was used in this comparative study. In this study, two hundred and eighty elderly patients who were hospitalized were included. Eighteen of the 280 students withdrew from the study for some reasons. Thus, of the 262 individuals, 131 were assigned to Group A, a conventional group, which received standard hospital-acquired care (functional bed transition training), and 131 were assigned to Group B, an experimental group, which received therapeutic reconditioning procedure. Before the study began, written consent was acquired, and each group was given an explanation of the study's methodology. According to the results, a pre-test evaluation was conducted. Following the implementation of an exercise program for both groups, an outcome evaluation was conducted in order to document the post-test results. With reference of an article which was studied by Song et al., the prevalence given for frail elder was 22.7%.[8] The sample size was calculated.

$4pq/L^2$. p was considered as 22.7, q was 100-22.7= 77.3, and L was considered as 25. The sample size thus was 280.

$$\frac{4\times22.7\times77.3}{25}=280\ participants$$

262 elderly patients who have been admitted within the hospital's configuration, on the basis of the inclusion and exclusion criteria were selected for the study. Participants were informed about the aim and procedure of research study and included both sexes who were 60 years of age or older and who spent one to ten days in the hospital. The study excluded participants who had undergone recent abdominal surgeries, had a history of malignancies or cancer, or were suffering from significant neurological impairments or morbidity-related problems.

There were 262 participants in the study. By accounting for significant factors such as age and comorbidities, stratified randomization was used to guarantee an equitable distribution of individuals in the conventional and experimental groups. Following that, the contestants were split up into two groups, with 131 people each: Group A (Functional Bed Transition Training Protocol) and Group B (Therapeutic Reconditioning Protocol). There were four weeks set up for this study.

Data collection tools

$$DAT-HEP\ Index=\frac{Total\ score}{25}*100$$

Table 1: DAT-HEP- Deconditioning assessment tool for hospitalized elderly patients

Domain	Scoring Criteria
Muscle Strength	0- No muscle contraction
	1- Flicker of Contraction
	2- Full ROM with gravity
	3- Full ROM against gravity
	4- Full ROM against gravity with minimal resistance
	5- Full ROM against gravity with maximal resistance
Endurance	0- Unable to perform endurance task
	1- Severe fatigue with 30 repetitions
	2- Moderate fatigue with 30 repetitions
	3- Mild fatigue with 30 repetitions
	4- Can sustain >30 but less than 60 repetitions
	5- No fatigue, Completes endurance task effortlessly
Balance and Mobility	0- Bedridden, no independent movement
	1- Needs maximum assistance for sitting
	2- Can sit unsupported but cannot stand
	3- Can stand with minimal support
	4- Walks with assistance or support
	5- Walks independently without support
Functional Independence	0- Totally dependent in all activities
	1- Can perform <25% of ADL independently
	2- Can perform 26-50% of ADL independently
	3- Can perform 51-75% of ADL independently
	4- Can perform >75% of ADL independently
	5- Completely independent in ADL
Cardiovascular Status	0- Extreme breathlessness, unable to move for ADL
	1- Very severe breathlessness, frequent rest needed for ADL
	2- Moderate breathlessness, difficult to continue ADL
	3- Mild exertion, able to complete all ADL with efforts
	4- Slight exertion, able to tolerate all ADL without taking breaks
	5- No exertion

Table 1 presents the DAT-HEP tool, a structured assessment developed in this study to evaluate deconditioning in hospitalized elderly patients. It consists of five domains: muscle strength, endurance, balance and mobility, functional independence, and cardiovascular status, each scored on a 0-5 scale. Muscle strength is assessed using a progressive scale from no muscle contraction (0) to full ROM against maximal resistance (5). Endurance is measured based on fatigue levels during repeated movements, ranging from inability to perform (0) to completing the task effortlessly (5). Balance and mobility evaluate a patient's ability to sit, stand, and walk, from being bedridden (0) to independent walking (5). Functional independence is scored based on the percentage of ADLs performed independently, from total dependence (0) to complete independence (5). Cardiovascular status is assessed using exertion levels, from extreme breathlessness with no activity tolerance (0) to no exertion (5).

Table 2: Final interpretation table

Total Score (0-25)	Index (%)	Deconditioning Level
0-10	0-40%	Severe Deconditioning
11-17	41-68%	Moderate Deconditioning
18-22	69-88%	Mild Deconditioning
23-25	89-100%	No deconditioning

Table 2 provides the final interpretation of the DAT-HEP Index, categorizing patients into different levels of deconditioning based on their total score. The DAT-HEP total score (0-25) is converted into a percentage using the formula:

$$\text{DAT-HEP Index} = (\text{Total Score} / 25) \times 100$$

This percentage determines the severity of deconditioning, classified into four levels. A score of 0-10 (0-40%) indicates severe deconditioning, where the patient experiences extreme functional decline, dependence in ADLs, and significant mobility and endurance limitations. A score of 11-17 (41-68%) represents moderate deconditioning, where patients show some mobility and functional ability but still require considerable assistance. Mild deconditioning is categorized within 18-22 (69-88%), indicating partial functional independence with minimal exertion-related limitations. Finally, a score of 23-25 (89-100%) reflects no deconditioning, meaning the patient has regained full functional capacity, independence in ADLs, and normal endurance and cardiovascular tolerance. This classification helps in clinical decision-making by providing a clear measure of recovery, ensuring appropriate rehabilitation planning based on the patient's deconditioning level.

2.2. Procedure

A methodical approach was used to validate the Deconditioning Assessment Tool for Hospitalized Elderly Patients (DAT-HEP). Initially, an extensive literature search was conducted to identify existing assessment tools and parameters relevant to deconditioning in elderly inpatients. This led to the tool's design and assessment by subject-matter specialists, such as physiotherapists and physicians with expertise in rehabilitation and geriatrics. Their constructive feedback and recommendations were incorporated to enhance the tool's clarity, clinical relevance, and applicability. Following this, the modified version was resent to medical experts for further evaluation, ensuring that the tool met the necessary standards for reliability and validity. Following several iterations and expert consensus, the DAT-HEP was finally approved as a thorough and organized evaluation tool for determining the degree of deconditioning in senior patients admitted to hospitals.

Before any study related procedures were carried out, all individuals were told about the research objectives and gave their written informed consent to participate in the study. The entire rehabilitation regimen lasted for four weeks. The conventional group i.e. Group A rehabilitation regimen started with breathing exercises, passive bed mobility exercises during the Acute Phase (Days 1–5). These exercises included two sets of ten repetitions of supine to side-lying, side-to-side rolling and supine-to-sit transitions. Seated balance activities, which involve sitting unsupported at the edge of the bed for two to three minutes in three sets, were combined with assisted hip bridging exercises, which involve ten repetitions over two sets, to engage the core muscles. The program progressed to active mobility drills during the Subacute Phase (Days 6–10), which included log rolling and bridging with a hold for ten repetitions in three sets. In order to improve dynamic balance, participants also performed lateral edge-of-bed weight shifts (10 repetitions × 2 sets) and conducted sit-to-stand transitions with bed rails or little help (5 repetitions × 3 sets). In the Pre-Discharge Phase (Days 11–14), patients practiced rolling and sitting down without help for ten repetitions in three sessions, with an emphasis on independent bed mobility. In order to prepare for independent mobility at discharge, this was supplemented with transfer practice, which included chair-to-bed and sit-to-stand exercises (10 repetitions × 3 sets). The final step was functional walking introduction over a distance of 5–10 meters in 3 sets.

The experimental group's rehabilitation regimen was based on a progressive two-week Therapeutic Reconditioning Protocol that was broken down into three stages and addressed cardiovascular recovery, strength, endurance, balance, and mobility. Patients performed passive and aided breathing exercises: diaphragmatic breathing, pursed lip breathing, segmental breathing; limb exercises, including heel slides, ankle pumps, and controlled hip and knee flexions, during Phase 1 (Early Mobilization, Days 1–5). They completed 10 repetitions per set over two sets in order to promote circulation and neuromuscular activation. Additionally, they performed bed-based mobility exercises, such as assisted rolling, pelvic tilts, for 10 repetitions per set over three sets to improve core stability and functional mobility, and they engaged in isometric strengthening exercises that targeted the quadriceps, gluteal muscles, and core, performing 5 repetitions per set with a 5-second hold for three sets. The program progressed to active-resisted limb exercises in Phase 2 (Functional Strengthening, Days 6–10), which included seated leg lifts and resistance band-assisted ankle dorsiflexion, with three sets of 10 repetitions each. In order to enhance lower extremity coordination, patients performed sitting marching (knee lifts) for 10 repetitions each set across three sets. Resistance band exercises for shoulder flexion and hip abduction at 10 repetitions per set over 3 sets were also used to improve upper body and hip stability, as did progressive sit-to-stand training with 5 repetitions per set for 3 sets, progressively decreasing assistance. During Phase 3 (Progressive Endurance & Mobility, Days 11–14), functional mobility and dynamic balance became the main focus. After performing standing balance exercises (tandem stance and weight shifts) for 30 seconds each, the patients started stair climbing with supported step-ups of five steps each set for three sets and overground gait training by walking 5–10 meters per set in three sets with little help. The new tool, DAT-HAP, conducted a pre- and post-assessment of the elderly patients who were hospitalized in order to compare the efficacy of the two therapies and ensure validity.

2.3. Statistical analysis

For the pre and after group assessments, the data were entered into an Excel sheet and analysed using the paired t-test. The between-group analysis was conducted using the unpaired t-test. The mean with standard deviation or median were used to express continuous data, and the two groups' differences were compared. Software called SPSS version 26 was used to do statistical analysis on the recorded data.

3. Results

Table 3 summarizes the demographic data of the 262 participants in the study. Of these, 31.67% were between the ages of 71 and 80, 15.26% were 81 and beyond, and 53.05% were between the ages of 60 and 70. The gender distribution was 37.02% female and 62.97% male. In terms of employment status, 45.03% were non-workers and 54.96% were workers. Of those with habits, 22.51% used mishri, 23.66% used tobacco, 10.68% smoked, and 53.81% said they had no habits. 27.48% of respondents were independent, 47.32% were moderately dependent, and 25.19% were dependent, according to functional status. Finally, among the individuals, comorbidities comprised diabetes in 29.77%, hypertension in 49.61%, and both in 20.61%.

Table 4 shows the Manual Muscle Test results for both groups. Flexors ($t = 3.19$, $p = 0.0008$) and extensors ($t = 3.48$, $p = 0.0003$) were significantly improved in Group A, but both flexors ($t = 8.41$, $p < 0.0001$) and extensors ($t = 12.50$, $p < 0.0001$) were highly significantly improved in Group B. Group A did not exhibit any significant change ($t = 1.45$, $p = 0.0737$) in rotators, but Group B also saw a substantial rise ($t = 6.17$, $p < 0.0001$).

Table 5 compares the endurance results for both groups. With a pre-test score of 2.97 ± 1.35 and a post-test score of 3.53 ± 1.27, Group A showed a substantial improvement, as indicated by a t-value of 3.39 and a p-value of 0.0004. With a t-value of 5.08 and a very significant p-value of <0.0001, Group B's pre-test score of 2.87 ± 1.38 improved to 3.68 ± 1.21 post-test, indicating even more progress.

Table 3: Demographic data

Demographic Variables	Category	No. of Participants (n=262)	Percentage %
Age	60-70 years	139	53.05%
	71-80 years	83	31.67%
	81 and above	40	15.26%
Gender	Male	165	62.97%
	Female	97	37.02%
Working Status	Workers	144	54.96%
	Non-Workers	118	45.03%
Habits	Mishri	59	22.51%
	Tobacco	62	23.66%
	Smoking	28	10.68%
	None	141	53.81%
Functional Status	Independent	72	27.48%
	Partially dependent	124	47.32%
	Dependent	66	25.19%
Comorbidities	Hypertension	130	49.61%
	Diabetes	78	29.77%
	Both	54	20.61%

Table 4: Comparison of mean scores of core MMT between both the groups

Manual Muscle Test	Pre	Post	t-value	p-value
Flexors: Group A (n=131)	3.02 ±0.8271	3.45 ±1.296	3.19	0.0008
Group B (n=131)	3.01 ±1.074	4.01 ±0.8180	8.41	<0.0001
Extensors: Group A (n=131)	2.92 ±0.7506	3.26 ±0.8487	3.48	0.0003
Group B (n=131)	3.14 ±0.7030	4.10 ±0.5299	12.50	<0.0001
Rotators: Group A (n=131)	3.18 ±0.5233	3.27 ±0.4970	1.45	0.0737
Group B (n=131)	3.10 ±0.5442	3.61 ±0.7603	6.17	<0.0001

Table 5: Comparison of mean scores of endurance between both the groups

Endurance	Pre	Post	t- value	p-value
Group A (n=131)	2.97 ±1.350	3.53 ±1.273	3.39	0.0004
Group B (n=131)	2.87 ±1.383	3.68 ±1.209	5.08	<0.0001

Table 6: Comparison of mean scores of balance and mobility between both the groups

Balance and Mobility	Pre	Post	t-value	p-value
Group A (n=131)	2.02 ±0.5112	2.22 ±0.7472	2.60	0.0048
Group B (n=131)	2.13 ±0.6000	2.64 ±1.156	4.56	<0.0001

Table 7: Comparison of mean scores of functional independence between both the groups

Functional Independence	Pre	Post	t- value	p- value
Group A (n=131)	1.94 ±0.9668	2.27 ±1.234	2.45	0.0074
Group B (n=131)	1.96 ±0.9640	2.77 ±1.614	4.97	<0.0001

Table 8: Comparison of mean scores of cardiovascular status between both the groups

Cardiovascular Status	Pre	Post	t-value	p-value
Group A (n=131)	2.33 ±1.134	2.76 ±1.358	2.76	0.0030
Group B (n=131)	2.47 ±1.125	3.73 ±1.021	9.48	<0.0001

Table 6 outlines the balance and mobility scores. Group A's pre-test score was 2.02 ± 0.51, increasing to 2.22 ± 0.75 post-test, with a t-value of 2.60 and a p-value of 0.0048. Group B improved from a pre-test score of 2.13 ± 0.60 to 2.64 ± 1.16 post-test, achieving a t-value of 4.56 and a p-value of <0.0001, which is considered as extremely significant.

Table 7 presents the functional independence scores. The results of Group A showed an improvement, rising from 1.94 ± 0.97 before the test to 2.27 ± 1.23 after it, with a t-value of 2.45 and a p-value of 0.0074. With a pre-test score of 1.96 ± 0.96 increasing to 2.77 ± 1.61 post-test, Group B showed a more noticeable shift in comparison. This led to a t-value of 4.97 and a highly significant p-value of <0.0001.

Table 8 compares cardiovascular status scores. Group A's score improved from 2.33 ± 1.13 on the pre-test to 2.76 ± 1.36 on the post-test, with a t-value of 2.76 and a p-value of 0.0030. The cardiovascular state of Group B, on the other hand, significantly improved, rising from 2.47 ± 1.13 pre-test to 3.73 ± 1.02 post-test, with a t-value of 9.48 and a very significant p-value of <0.0001.

4. Discussion

The purpose of this research study was to create a tool (DAT-HEP) to gauge the degree of deconditioning in elderly patients who were admitted to the hospital, to validate the tool by sending it to a number of medical experts and to assess how well a therapeutic reconditioning process mitigated deconditioning in comparison to normal hospital care (Functional Bed Transition Training). The principal conclusion is that both the experimental (Group B) and conventional (Group A) groups improved in every aspect that was examined, including cardiovascular state, muscle strength, endurance, balance and mobility, and functional independence. In contrast to the conventional group, the experimental group (Group B), which was given the therapeutic reconditioning treatment, showed noticeably larger improvements across the board.

One innovative tool for thoroughly assessing physical performance in the elderly population is the Deconditioning assessment tool for hospitalized elderly patients (DAT-HEP). The DAT-HEP combines several domains into a single, user-friendly tool with a 0–5 scoring system. This contrasts with other tools that evaluate individual components of deconditioning, such as the Barthel Index for functional independence or the Berg Balance Scale for balance. These domains include muscle strength,[9] endurance,[10] balance and mobility,[11] functional independence,[12] and cardiovascular status.[13,14] This comprehensive approach provides a more holistic assessment of deconditioning, enabling clinicians to identify specific areas of impairment and implement more targeted interventions.

Noted in their "EASE-BE FIT" pilot trial that a systematic reconditioning program for senior patients is feasible and may have advantages.[15] As part of the Elder-friendly Approaches to the Surgical Environment-bedside reconditioning for Functional Improvements (EASE-BE FIT) pilot project, a reconditioning program for older abdominal surgery patients was developed. Our study shows The effectiveness of a comparable method in a larger group of hospitalized older people, whereas theirs concentrated on post-operative abdominal surgery patients. As essential elements of our therapeutic reconditioning regimen, early mobilization and progressive exercise were also highlighted in the "EASE-BE FIT" study.[16]

Furthermore, the results are in line with a study that showed how well a reconditioning exercise program can improve functional outcomes for older people who have hospital-acquired deconditioning.[17] Although this study offered solid proof of the advantages of reconditioning exercises, it did not directly contrast a thorough reconditioning program with the bed transition training that is part of normal hospital care. Results of this study expand on these findings by showing that a full therapeutic reconditioning regimen that includes cardiovascular recovery, strength, endurance, balance, and mobility exercises is superior to routine bed transition training alone. Given that Group B showed noticeably larger improvements in every category that was examined, it appears that a more comprehensive and multidimensional strategy is required to successfully handle the intricate problem of deconditioning in older patients in hospitals.

The study's results are also consistent with those of who worked to create a model for home rehabilitation as an alternative to hospitals for patients in need of reconditioning.[17] Although they investigated how home-based rehabilitation might lower readmissions to hospitals and enhance patient outcomes, our research shows how crucial it is to start reconditioning while a patient is in the hospital to stop additional deconditioning and maximize functional recovery prior to discharge. Both findings highlight how important reconditioning is for enhancing the health and wellbeing of hospitalized elderly patients. In order to gauge these patients' progress, the DAT-HEP might be useful.

The effectiveness of resistance training in increasing muscle size and strength in extremely elderly persons is further supported by a meta-analysis.[18] These results highlight how crucial it is to include resistance training in older persons' reconditioning regimens in order to prevent sarcopenia and enhance functional ability. Our research supports these conclusions because the experimental group's notable increases in muscle strength were probably facilitated by the increasing resistance exercises that were a part of the therapeutic reconditioning regimen. Additional proof that resistance training is beneficial in addressing muscular weakness and fostering functional recovery in this population comes from Group B's notable gains in muscle strength as determined by the Manual Muscle Test.

5. Strength of the tool

The Deconditioning Assessment Tool for Hospitalized Elderly Patients (DAT-HEP) is a multifaceted, systematic evaluation that uses established scales to measure deconditioning objectively. Its key strength lies in its comprehensive approach, integrating muscle strength, endurance, balance, functional independence, and cardiovascular status to provide a holistic evaluation. In comparison to single-domain evaluations, DAT-HEP guarantees increased precision in monitoring physical functional decline and rehabilitation advancement. Expert medical advice and physiotherapy guidelines served as the foundation for the tool's development and refinement, guaranteeing its clinical relevance and usefulness.

6. Limitations of the Study

Although the Deconditioning Assessment Tool for Hospitalized Elderly Patients (DAT-HEP) showed clinical utility, it is important to recognize its limitations. The sample size was limited, which may affect the generalizability of the findings across a broader population. Long-term follow-up was not included, making it difficult to assess if functional improvements measured by the tool were sustained post-discharge. Finally, the results might have been affected by patient compliance and individual differences in recovery capacity, underscoring the need for more accurate outcome analysis in future studies using stratified patient groups.

7. Future Recommendations

To improve the tool's applicability, future studies should extend validation across a range of patient demographics and therapeutic contexts. To determine whether the gains shown by DAT-HEP are maintained after discharge, long-term follow-ups are required. Furthermore, assessing its predictive validity could determine its function in predicting hospital stay length, re-hospitalization risks, and recovery rates. Additional developments could improve clinical efficiency and usability, such as creating a digital version for automated scoring and real-time assessment.

Therefore, this research offers more proof of the value of a thorough and progressive strategy. Even if standard bed transition training is helpful, it might not be enough to reverse the consequences of deconditioning in older individuals who are hospitalized. With its emphasis on cardiovascular recovery, strength, endurance, balance, and mobility, the therapeutic reconditioning program seems to be more successful in enhancing physical function and encouraging functional independence.

8. Conclusion

A new assessment tool, DAT-HEP, was developed in this study to evaluate deconditioning in hospitalized elderly patients. The DAT-HEP tool—a new tool created to thoroughly evaluate deconditioning in hospitalized elderly patients—proved useful in assessing and tracking the patient’s improvement. In order to validate the recently created Deconditioning Assessment Tool for Hospitalized Elderly Patients (DATHEP), it was given to geriatric experts, physical therapists, and medical professionals who evaluated how well it identified deconditioning in elderly patients. A comprehensive and systematic literature review was conducted to ensure a strong theoretical foundation for the development of the DAT-HEP tool. It was reviewed, corrected by the medical experts and modified accordingly. Correlation with current functional assessment instruments, clinical feasibility analysis, and inter-rater reliability testing were all part of the validation procedure. This study concludes that, in contrast to typical functional bed transition training exercises, a comprehensive therapeutic reconditioning program is beneficial in improving the physical performance of older patients in hospitals. In every outcome measure, including cardiovascular health, muscle strength, endurance, balance, mobility, and functional independence, both groups demonstrated notable gains. A statistically significant difference was observed in the improvement of core muscle strength ($p < 0.0001$), endurance ($p < 0.0001$), balance and mobility ($p < 0.0001$), overall functional independence ($p < 0.0001$), and cardiovascular status ($p < 0.0001$) in Group B, which received the reconditioning program.

9. Author Contributions

SD, KG, and SA conducted the literature review. SD, SA, PM, and SS were responsible for drafting the introduction and interpreting the study's findings. KG, SD, PM, and SS participated in data collection, while SA and SS carried out the data analysis. SS, SA, SD, and KG contributed to the background information and assisted in drafting the manuscript. All authors contributed to the preparation of the manuscript, reviewed its content, and approved the final version for publication.

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11. Conflict of Interest

The authors declare that they have no conflicts of interest related to this article.

12. Ethics Statement

The study received approval from the Institutional ethical committee of Krishna Vishwa Vidyapeeth, Karad (Ref. No. KIMSDU/IEC/03/2015).

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