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# Examining physical activity participation barriers among adults 50 years and older: a scoping review

**Mariana Wingood**[a,b], **Michelle G. Criss**[c], **Kent E. Irwin**[d], **Patricia M. Bamonti**[e,f], **Rebekah Harris**[g,h], **Emma L. Phillips**[i], **Jennifer L. Vincenzo**[j], **Kevin K. Chui**[k]

[a]Department of Implementation Science, Wake Forest University School of Medicine, Winston-Salem, NC, USA;

[b]Sticht Center for Healthy Aging and Alzheimer's Prevention, Internal Medicine, Gerontology and Geriatric Medicine, Wake Forest University School of Medicine, Winston-Salem, NC, USA;

[c]Doctor of Physical Therapy Program, Chatham University, Pittsburgh, PA, USA;

[d]Department of Physical Therapy, Midwestern University, Downers Grove, IL, USA;

[e]Research & Development, Veterans Affairs Boston Healthcare System, Boston, MA, USA;

[f]Department of Psychiatry, Harvard Medical School, Boston, MA, USA;

[g]New England Geriatric Education and Clinical Center, Veterans Affairs Boston Healthcare System, Boston, MA, USA;

[h]Physical Medicine and Rehabilitation, Harvard Medical School, Boston, MA, USA;

[i]The Greater Baltimore Medical Center, Towson, MD, USA;

[j]Department of Implementation Science, University of Arkansas for Medical Sciences, Fayetteville, AR, USA;

[k]Department of Physical Therapy, Radford University, Roanoke, VA, USA

## Abstract

**Background:** Addressing physical activity (PA) barriers is essential for increasing PA levels in middle-aged and older adults. However, there are no recommendations on selecting PA barrier assessment tools.

**Objectives:** Thus, we aimed to identify and provide clinimetric properties on PA barrier assessment tools that healthcare providers, exercise experts, and public health officials can use to examine potential barriers faced by community-dwelling adults 50 years and older.

**Methods:** We performed a systematic search of the following databases: PubMed, PsycINFO, CINAHL, and Web of Science. Articles were included if they presented clinimetric data on a

**CONTACT** Mariana Wingood mwingood@wakehealth.edu Department of Implementation Science, Wake Forest School of Medicine, Winston Salem, NC, USA.

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PA participation barrier assessment tool for community-dwelling participants with a mean age of 50 years and older. The 561 identified articles underwent multiple rounds of blinded reviews. Included articles underwent data extraction for participant characteristics, scoring, constructs, reference tests, and clinimetric properties.

**Results:** The 35 included articles reported on 33 different PA participation barrier assessment tools. Eighteen articles reported on participants with cardiovascular, musculoskeletal, or neurological diagnoses, diabetes, hemodialysis, history of cancer, or mobility limitations. Tools with two or more supporting publications included the Exercise Benefits/Barrier Scale (EBBS), Episode-Specific Interpretations of Exercise Inventory (ESIE), and Inventory of Physical Activity and Barriers (IPAB). Due to differences in methodologies, across-tool comparison was not possible.

**Conclusion:** The EBBS, ESIE, and IPAB are promising tools for community-dwelling adults 50 years and older. However, additional research is warranted to identify the best PA barrier assessment tool among adults 50 years and older.

### Keywords

Physical activity; barriers; older adults; primary prevention

## Introduction

Most (91%) older adults (65 years and older) and 25% of middle-aged adults (50–64 years of age) do not meet the recommended levels of physical activity (PA), resulting in increased risk of injury, frailty, falls, disability, morbidity, and mortality [1–4]. The benefits of PA and the long-term repercussions associated with insufficient PA levels highlight the need to address inadequate PA levels seen among individuals 50 years and older [5,6]. This need is further supported by the Centers for Disease Control and Prevention, which identified that individuals 50 years and older who are inadequately active have a greater number of co-morbidities, worse self-reported health, and poorer quality of life [4]. Furthermore, four of the five most costly chronic conditions among adults 50 years and older can be prevented or managed with adequate PA [4].

Healthcare providers, exercise experts, and public health officials can ameliorate the negative health consequences associated with inadequate PA levels by implementing evidence-informed interventions tailored to meet the needs of an individual or group of individuals [7,8]. These interventions should incorporate solutions to PA participation barriers experienced by the individual(s) [9–12]. Determining appropriate interventions requires identifying PA barriers *via* a PA barrier assessment tool. Additionally, measuring the success of interventions designed to address specific PA participation barriers requires an evaluation of the intervention's impact on those barriers [13].

Several unifactorial tools can be used to assess a single PA participation barrier, such as self-efficacy, environmental barriers, or social barriers [14–18]. However, most individuals have more than one barrier, including lack of knowledge, skills, confidence, resources, or support from family or friends, and the presence of anxiety, depression, pain, mobility limitations, environmental barriers, or other non-negotiable priorities (e.g. caregiving, work, etc.) [19]. Thus, healthcare providers, exercise experts, and public health officials need to use multiple unifactorial scales to determine appropriate interventions for individuals 50 years and older, a time-consuming and clinically infeasible process. To our knowledge, there is no guidance on assessing multifactorial PA participation barriers, particularly for subgroups of individuals who experience a greater number of PA barriers than healthy adults 50 years and older, such as individuals managing chronic health conditions known to impact PA levels [19,20].

Therefore, additional guidance on available PA participation barriers is needed [21]. We aim to conduct a comprehensive and systematic mapping of self-reported PA participation barrier assessment tools that healthcare providers, exercise experts, and public health officials can use to examine potential PA participation barriers faced by community-dwelling adults 50 years and older. A secondary aim was to examine the tools' clinimetric properties and constructs or sub-scales incorporated within the tool.

## Materials and methods

### Design

We completed our scoping review using a previously published protocol [22]. The protocol highlights our use of the first 5 of 6 stages presented by Levac et al. and Arksey and O'Malley [23,24], including: 1) identifying the research questions; 2) identifying the relevant articles; 3) selecting articles to review; 4) charting the data from selected articles; 5) summarizing and reporting results; and 6) consulting the relevant users of PA participation barrier assessment tools. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) was used for this study [25].

### Search strategy

With the assistance of a health science librarian, we completed a comprehensive search strategy adapted for each of the following databases: OVIDMed, PsycInfo, CINAHL, PEDro, and Web of Science. For this search, we used the following initial inclusion criteria: articles were included if they: 1) presented either a) data on development or clinimetric properties of PA participation barrier assessment tool(s); or b) relative risk or odds ratios of PA participation barrier(s); 2) compared PA participation barriers or PA participation barrier assessment tool(s) to either subjective or objective measures of PA; and 3) included community-dwelling participants with a mean age of 50 years and older. Articles were excluded if: 1) the PA participation barrier(s) or PA participation barrier assessment tool(s) were compared to measures of sedentary behavior or treatment programs such as cardiac rehabilitation; 2) they were an intervention study, systematic review, literature review, qualitative papers, poster, dissertation, platform, protocol, or abstract; and 3) they were not published in English (i.e. the publisher did not provide an English publication and/or translation).

The medical subject heading (MeSH) search terms were identified based on the authors' extensive experience in health science literature reviews and PA participation barrier assessment tools. We also asked for feedback from healthcare providers, exercise experts, or public health officials that use PA participation barrier assessment tools. The feedback occurred informally *via* e-mails and virtual conversations. The final search strategy is presented in supplemental digital content A. The search was completed in December 2021 and included articles from the inception of the database through December 2021. The search strategies and results are summarized in the PRISMA flow diagram (Figure 1).

### Article selection

A health science librarian provided the first author (MW) with a list of articles. Upon initial review, we identified several articles that did not have a comparison to PA (did not meet the second inclusion criteria) but included relevant data on validity and reliability that would address the overall objective of this scoping review. Therefore, we expanded the original second inclusion criteria (i.e. compared PA participation barriers or PA participation barrier assessment tool(s) to either subjective or objective measures of PA) to 'articles that presented validity or reliability data on a PA participation barrier assessment tool'. For example, Justine (2013) used a non-standardized question to determine exercise participation but did not compare the PA barrier assessment tool to a PA measure [26]. Furthermore, this study reported internal consistency and test-retest reliability data which addressed our objective of assessing clinimetric data and therefore was included [26].

After duplicates were removed, all authors met virtually to discuss inclusion/exclusion screening of the first five abstracts. By the 5th abstract, the team reached a 100% agreement on inclusion or exclusion without need for discussion. The rest of the abstracts were reviewed by the first author (MW). The first author randomized second reviewers, who independently reviewed all abstracts and titles. The randomization occurred *via* an Excel document. Each row of the Excel spreadsheet had a co-author's name on it. The primary author used the randomization function of Excel to assign each co-author a number between one to seven. The co-author assigned to number one was assigned to review the first 1/7 of the 535 abstracts, the co-author assigned to number two reviewed the second 1/7, etc. Abstracts with uncertainty about inclusion criteria were left for full-text review, which were independently completed by a new pair of randomly assigned co-authors. After the first author (MW) received the full-text review decisions, articles with disagreement between co-authors were flagged and then discussed and decided upon by the first (MW), second (MC), third (KI), and last author (KC). These co-authors went through the 27/535 full text articles that did not reach agreement by the initial pair of reviewers. Their discussion was guided by an Excel document. In the Excel document each article was assigned a row. For each article, an inclusion and exclusion column had to be completed, meaning the co-authors independently went through each inclusion and exclusion criteria and completed a checklist of how these criteria were met. After modifications to inclusion criteria were made, the same group of co-authors (MW, MC, KI, and KC) re-reviewed all papers for inclusion and only included those that all four reviewers agreed upon.

### Data extraction

Data were extracted from the included articles using a modified version of the American Physical Therapy Association Section on Research's Evaluation Database to Guide

Effectiveness (EDGE) Task Force data extraction form [27]. Please see supplemental digital content B for a copy of the extraction form. The primary author (MW) cross-checked all data entries on the extraction forms and highlighted any errors. A second author (MC) corrected all highlighted errors.

### Summarizing and reporting the results

Tables 1 and 2 present the following key findings related to each PA participation barrier assessment tool: participant characteristics, type of scale and scoring, constructs/subscales, reference tests (if used), and clinimetric properties. Two authors (KI and KC) cross-checked all data in the tables and made corrections as needed. These tables represent the key findings on PA participation barrier assessment tools used for community-dwelling adults 50 years and older with and without a specific diagnosis included in this review.

## Results

The initial database search yielded 561 articles. After removing duplicates ($n = 64$) and data mining for articles ($n = 38$), 535 abstracts were screened for inclusion. After 395 abstracts were identified as not meeting the inclusion criteria, 204 full-text articles were reviewed in detail for both inclusion and exclusion criteria. After the initial abstract and full-text article review process, 40 articles were included in the scoping review (Figure 1). Due to the modification of our inclusion/exclusion criteria, the team re-reviewed all excluded abstracts and articles, resulting in the addition of seven articles [28–34] and a final count of 47 articles that underwent data extraction [3,16,26,28–71]. The majority of studies (35/47, 74.4%) provided validity and/or reliability data, which is the focus of this review [3,16,26, 30,32–61,71]. In contrast, the minority of studies (12/47, 25.5%) included only odds ratios or relative risks related to PA participation barriers and PA levels, which will be summarized in a separate publication [28,29,31,62–70]. The 35 publications yielded 33 different PA participation barrier assessment tools. A comparison across tools could not be completed due to the differences in participation populations, variations among the tools, and inconsistent use of reference tests. We separated the tools based on populations of interests, with Table 1 focusing on community-dwelling middle-aged and older adults and Table 2 focusing on community-dwelling middle-aged and older adults with specific diagnoses that are known to impact PA.

### Methodologies used by included articles

Out of the 35 included articles, all 35 reported internal consistency *via* Cronbach's $\alpha$ [3,16,26,30,32–61,71], 18 reported test-retest reliabilities [3,26,35, 36,38–41,44,48,49,51,52,54,56,71], six examined face validity [35,38,40,42,47,49], four reported content validity [41,42,48,49], 26 reported construct validity [3,33–51,53,54,56,58,60,71], and 10 reported other forms of validity [16,30,40,41,47,51,53,56,61,71]. Twelve articles completed more thorough reliability and validity assessments, meaning they evaluated at least four different clinimetric properties [3,35,38,40–42,47–49,51,56,71]. Among the 35 articles, five did not report a reference test [26,34,39,43,58], five used an unvalidated reference question(s) [16,32,40,44,55], 23 used a validated measure of PA levels [3,16,30,33, 35–38,41,42,45–49,53,54,56–61], and 2 used accelerometry data [54,71].

The validated measures used to assess PA levels included 7-Day Physical Activity Recall [41], Athletic Pursuits Questionnaire [53], Diet and Physical Activity Strategy [35], Exercise Behavior Analysis [45], Global Physical Activity Questionnaire [59], Godin Shephard Leisure-Time Exercise Questionnaire [36,60], International Physical Activity Questionnaire [47,48,54,57], Leisure Time Exercise Questionnaire [45], Minnesota Leisure Time Physical Activity Questionnaire [45], Minnesota Heart Health Program Physical Activity Questionnaire [45], Physical Activity and Disability Survey [38], Physical Activity Vital Sign [3,49,61], Physical Fitness and Exercise Activity of Older Adults Scale [56], Safe and Fit Environment [58], Stages of Change [30,33,37], and Yale Physical Activity Survey [42].

### Article characteristics: community-dwelling middle-aged and older adults

Out of the 35 articles, 18 reported on community-dwelling adults 50 years and older in general without reference to a specific diagnosis that can impact PA [3,16,26,33,37,40,42–46,49,52,54,56–58,61]. Among these reports on community-dwelling adults, eight articles included both middle-aged and older adults [3,26,33,45,49,54,58,61], and eight included just older adults [16,37,40,42,43,46,56,57]. Three articles only included women [43,45,46]. Measures of PA participation barriers that had more than one reference included the Exercise Benefits/Barrier Scale (EBBS; [42–44], Episode-Specific Interpretations of Exercise Inventory (ESIE;[45,46], and Inventory of Physical Activity Barriers (IPAB; [3,49,61]. See Table 1 for additional information.

### Article characteristics: specific populations (Table 2)

Out of the 35 articles, the remaining 18 reported on specific populations [30,32,34–36,38,39,41,47,48,50, 51,53–55,59,60,71]. Two articles focused on cardiovascular diagnoses- undergoing cardiac rehab and heart failure [35,71], three on diabetes [34,50,59], one on hemodialysis [41], four on history of cancer [32,36,51,54], six on musculoskeletal diagnoses or mobility limitations-pain, difficulty with mobility, osteoarthritis, osteoporosis, and frailty [30,38,47, 48,53,55], and two on neurological diagnoses-stroke and multiple sclerosis [39,60]. There was a total of 21 different measures of PA participation barriers, with three articles including more than one measure. No single measure was studied in more than one publication concerning special populations.

## Discussion

To our knowledge, this is the first scoping review that explores the current literature on PA participation barrier assessment tools that healthcare providers, exercise experts, and public health officials can use to examine potential barriers faced by community-dwelling adults 50 years and older. We presented the clinimetric properties of different PA participation barrier assessment tools that have been investigated in middle-aged and older adults. Multiple issues surrounding the evidence for PA participation barrier assessment tools use in this population were uncovered. The number of tools utilized, and the inconsistency of reliability and validity investigated make comparisons between tools difficult. Very few tools were used in more than one study which limits the ability to make recommendations. Comparing results of articles that focused on special populations versus those that focus on healthy community-dwelling populations was also not possible as the tools used in these 2 groups were not similar. Many of the special populations had multiple different single studies reporting PA participation barrier assessment tools, however, this review was not designed to investigate special populations. Therefore, we cannot say that this list of PA participation barrier assessment tools for special populations is exhaustive. Finally, we found that there is not a single standard reference test used for comparing PA participation barrier assessment tools to reported or actual PA levels.

The EBBS, ESIE, and IPAB were the only tools meeting the inclusion criteria with more than one publication supporting use among community-dwelling adults 50 years and older. The EBBS was initially validated among adults 18 to 88 years [72]. Additional studies validated the EBBS among women [43,73], older adults [44], and individuals with multiple sclerosis [74]. The EBBS is split into two sub-scales (benefits and barriers) and scored on a 4-point Likert scale, were 1 indicates ‘strongly disagree’ and 4 indicates ‘strongly agree’. The items of the two sub-scales are interspersed throughout the scale to avoid response-set behaviors. The 29 items on the Benefits Sub-Scale examine life enhancement, physical performance, psychological outlook, social interaction, and preventative health. The 14 items on the Barrier Sub-Scale examine exercise milieu, time expenditure, preventative health, and physical exertion.

The ESIE is a 37-item scale that was validated in community-dwelling middle and older aged women [46]. It is based on self-regulation theory which posits that physiological/somatic, cognitive/emotional, and social/environmental information about exercise is interpreted and then through feedback loops helps to control exercise behavior [45]. This scale aims to assess episode-specific interpretations of exercise and should be completed after an exercise session. The items on the ESIE are scored with a 9-point adjective anchored scale. For instance, ‘soreness during exercise was absent/sharp’ is scored with ‘absent’ on one end of a 9-point scale and ‘sharp’ at the other end. The ESIE examines thoughts and feelings, mental and physical exercise perceptions, visual and auditory perceptions of the environment, amount of concentration, social support, and enjoyment of each exercise episode.

The IPAB is a 27-item scale validated among community-dwelling adults 50 years and older and is based on the Social-Ecological Model, incorporating barriers related to individual, social, and environmental (institutional, organizational, and public policy) factors [75]. Therefore, the IPAB provides healthcare providers, exercise experts, and public health officials insights about different constructs that impact a patient’s PA levels. Each item on the IPAB starts with the same statement, ‘My physical activity is limited, because … ’. Respondents then answer *via* a 5-point Likert scale, where 1 indicates ‘never’ being a barrier and 5 indicates ‘always’ being a barrier. The overall purpose of this tool is to identify barriers to PA and initiate a conversation with the individual who is inadequately active.

With regards to clinimetric properties of the tools used in more than one publication, the EBBS has been shown to have good internal consistency, Cronbach’s alpha 0.83–0.958 [42,43], but inter-item correlations can vary widely, 0.235–0.804 [43]. A scale with strong internal consistency would be expected to have inter-item correlations between 0.7 − 0.9

[76]. The ESIE internal consistency was lower at 0.87, with Cronbach's alpha for each factor/subscale ranging from 0.70–0.92 [45,46]. The IPAB demonstrated the best overall internal consistency, 0.91–0.97, with the Cronbach's alphas across its factors ranging from 0.69–0.96 [3,49,61]. The IPAB reported an excellent test-retest ICC, 0.99 [3], while the reported EBBS test-retest reliability with Kendall's W was only moderate, 0.60 [44], and the ESIE does not have test-retest reliability data due to its measurement of specific exercise episodes. The IPAB is the only tool of the three that is focused solely on PA barriers, but the EBBS includes a barrier sub-scale. A limitation for both the ESIE and IPAB is that the work concerning our population of interest has only been performed by one research group for each tool. All tools need more research in the middle-aged and older adult population to enable a systematic review and direct comparison between them.

A few limitations must be appreciated concerning this scoping review. First, after reviewing selected articles, we discovered that requiring a comparison to a subjective or objective measure of PA was excluding important psychometric research. Therefore, we amended our second inclusion criteria so that essential components of psychometric research such as internal consistency and test-retest reliability were included. While altering methodology during an investigation is not optimal, a tool's development process is the most likely time that certain psychometric properties will be investigated. Thus, our decision was consistent with the original purpose to investigate reliability and validity of PA participation barrier assessment tools. The inability to compare tools to each other is another limitation, although it was not the primary purpose of this scoping review. Additional studies comparing tools to a strong reference test are needed before a comparison across tools can be done. Furthermore, due to our aim of mapping the literature and the limited literature available for each tool, we did not critically appraise the included articles. We also did not anticipate the multiple PA participation barrier tools identified for special populations. We did not include specific diagnoses in our search; therefore, there are most likely other diagnosis-specific PA participation barrier assessment tools that were not identified.

Despite these limitations, our scoping review has multiple strengths that support our findings and potential next steps. These strengths include 1) utilizing an a priori published protocol; 2) having an experienced librarian who is not invested in the findings of this scoping review or its clinical impact; 3) following reporting standards (i.e. PRISMA-ScR); 4) examining PA barrier assessment tools that are validated among healthy adults 50 years and older as well as special populations; and 5) providing insights into constructs or sub-scales included in currently available PA barrier assessment tools. These strengths allow us to point out that there are three tools (i.e. EBBS, ESIE, and IPAB) that have more than one study supporting validity and reliability. However, these tools have primarily been examined among healthy adults 50 years and older. There is very limited reliability and validity data available for PA barrier assessment tools for special populations. As most patients seeking physical therapy services have musculoskeletal diagnoses and/or comorbidities that impact PA participation barriers, it would be valuable to examine the validity and reliability of these tools among individuals with these diagnoses.

## Conclusion

Among the 33 different PA participation barrier assessment tools identified, 13 were validated for community-dwelling adults 50 years and older and 21 validated among special populations of the same age group, such as individuals with cancer, osteoporosis, diabetes, and stroke. Across tool comparison was not possible secondary to differences in methodologies. The EBBS, ESIE, and IPAB were the only tools with more than one study supporting their validity and reliability. Further research is needed in adults 50 years and older to identify the best way to assess PA barriers so that healthcare providers, exercise experts, and public health officials can facilitate and empower individuals to move towards more active lifestyles and better health.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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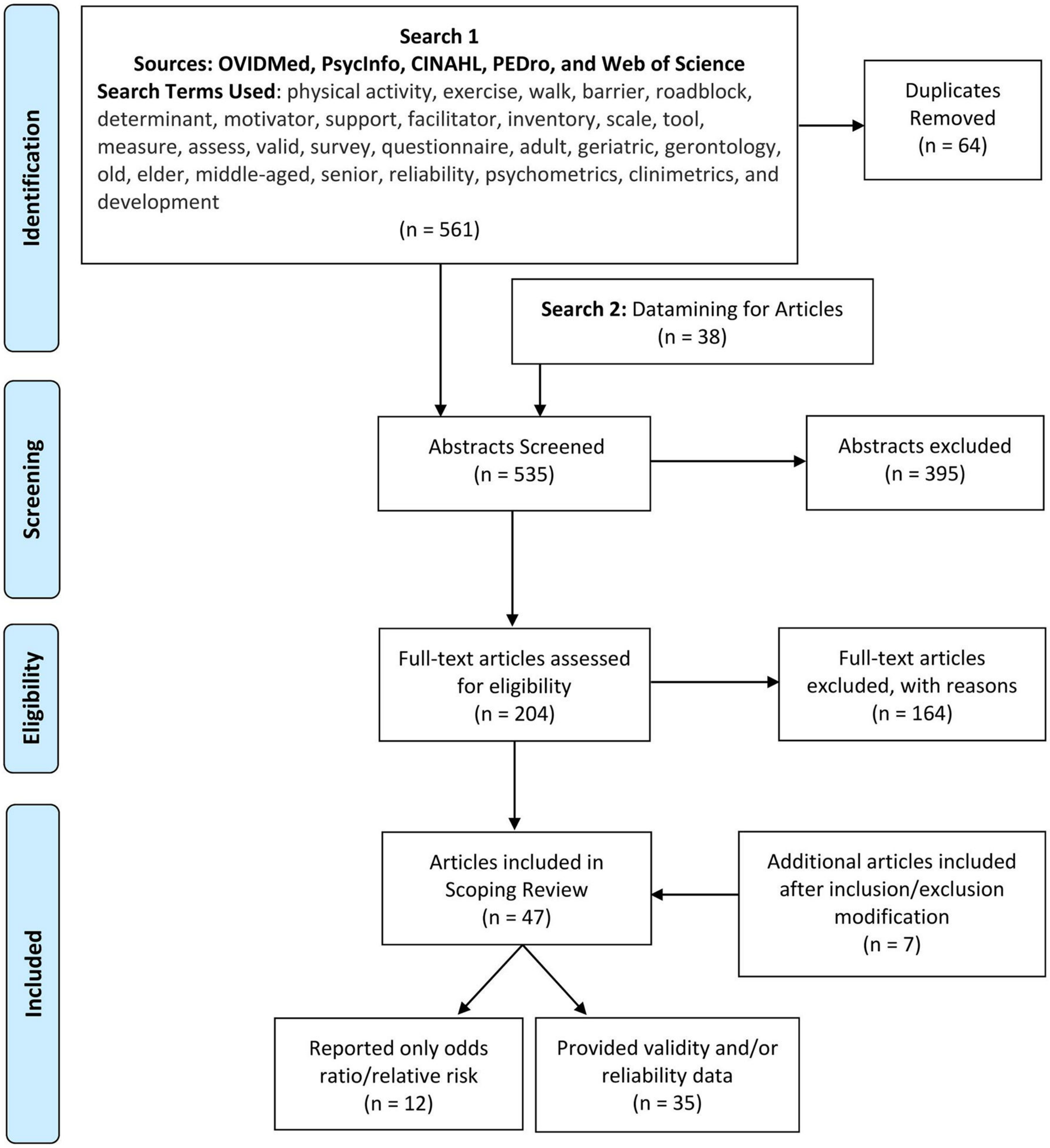


**Figure 1.**

PRISMA flow diagram for the scoping review process. A total of 561 articles were identified, 64 duplicates were removed and 38 were Added *via* datamining. We screened 535 abstracts and after excluding 395 abstracts, we reviewed 204 full articles for inclusion and exclusion criteria resulting in the exclusion 164 additional articles. After modification of inclusion/exclusion criteria, the initially excluded abstracts and articles were re-reviewed resulting in the addition of 7 articles and a total of 47 articles that underwent review, with the scoping review focusing on the 35 articles that included information about reliability and validity.

**Table 1.**

PA participation barrier assessment tools for community-dwelling adults 50 years and older.

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability, Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| **Barriers to Being Active Quiz (BBAQ)** | | | | | |
| Zalewski et al. 2014 [37] | Older adults who completed physical therapy = 73.9 (8.0) | Likert scale (0 = very unlikely; 3 = very likely) 21 items summed | Lack of time, social influence, lack of energy, lack of willpower, fear of injury, lack of skill, and lack of resources | Stages of change scale for physical activity | ***Internal Consistency*** *via* ***Cronbach's α:*** *Total = 0.92; 7 factors (lack of time, social influence, lack of energy, lack of willpower, fear of injury, lack of skill, and lack of resources) =* 0.43–0.85 |
| **Barriers in Physical Activity and Exercise Participation (BPEP)** | | | | | |
| Justine et al. 2013 [26] | Middle-aged and older adults between 45–65 | Likert scale (1 = strongly disagree; 5 = strongly agree) 22 items summed | Internal barriers, external barriers | None | ***Internal Consistency*** *via* ***Cronbach's α*** = 0.922<br>***Test-Retest Reliability*** *via* ***Correlations*** = 0.74–0.95 |
| **Chinese Barriers to Exercise (CBE)** | | | | | |
| Chou et al. 2008 [40] | Older adults = 73.86 (7.0) | Likert Scale (1 = strongly disagree; 5 = strongly agree) 23 items summed | Family, symptoms, equipment, learning, appearance, friends, location, facilities, environment, and excuse | Non-standardized question | ***Internal Consistency*** *via* ***Cronbach's α***: *Total = 0.69; 10 factors (family, symptoms, equipment, learning, appearance, friends, location, facilities, environment, and excuse) =* 0.43–0.86<br>***Test-Retest Reliability*** *via* ***Correlation*** = 0.76<br>***Interrater Reliability*** *via* ***Correlation*** = 0.79<br>***Content Validity:*** *5* practitioners rated all items as relevant or very relevant<br>***Construct Validity:*** *Individual factor loading =* 0.64–0.92; *Each factor's variance =* 4.27–18.17; *Each factor's eigenvalue =* 0.98–4.18; *Exercise levels and barriers:* r = −0.24 ($p < 0.01$) |
| **Exercise Benefits/Barrier Scale (EBBS)** | | | | | |
| Kamrani et al. 2014 [42] | Older adults = 302 were 60–75 years old and 78 were 76–90 years old | Likert scale (1 = strongly disagree; 4 = strongly agree) 29 benefits summed and 14 barriers summed | Benefits: Physical performance, psychosocial, body characteristics, psychological outlook, social interaction Barriers: Exercise milieu, family encouragement, fatigue, time expenditure, facility obstacles | Yale Physical Activity Survey | ***Internal Consistency*** *via* ***Cronbach's α:*** *Total = 0.83; Benefit sub-scale = 0.94, barrier sub-scale = 0.68; 10 factors (physical performance, psycho-social, body characteristics, psychological outlook, social interaction, exercise milieu, family encouragement, fatigue, time expenditure, facility obstacles) =* 0.50–0.91<br>***Face Validity and Content Validity:*** completed but not reported<br>***Construct Validity:*** *10-factor variance = 61.83%; Item loading =* 0.354–0.881<br>***Convergent Construct Validity*** *via* ***Correlations:*** *Physical activity rate (weekly kilocalories)* and *perceived benefits subscale of the EBBS =* 0.209; *Physical activity rate (weekly kilocalories) and the perceived barriers subscale of the EBBS =* −0.231 |
| Enríquez-Reyna et al. 2017 [43] | Women = 69 (5.44) | | Benefits and barriers | None | ***Internal Consistency:*** *Cronbach's α of 2 factors (barriers and benefits) =* 0.958; benefit sub-scale was poor suggested removing item 21; barrier sub-scale = 0.715; *Inter-item correlations of all items = 0.235 – 0.804* |
| Victor et al. 2012 [44] | Older adults age 60+ = 68 | | Benefits and barriers | Non-standardized questionnaire | ***Construct Validity:*** *2-factor variance =* 40.09%<br>***Internal Consistency*** *via* ***Cronbach's α:*** *Total =* 0.94; *2 factors (benefits and barriers) =* 0.87–0.93 |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability, Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| | | | | | ***Test-Retest Reliability*** *via* ***Kendall's W*** = 0.60<br>***Construct Validity Significant Difference Between:*** level of education ($p$ = 0.02) *and physical activity practice* ($p$ = 0.0001) *for the Benefits Scale, and level of education* ($p$ = 0.0001), *with whom one resides* ($p$ = 0.032) *and lifestyle* ($p$ = 0.0001) *for the Barriers Scale* |
| **Episode-Specific Interpretations of Exercise Inventory (ESIE)** | | | | | |
| Schneider, 1999 [45] | Women = 69.5 (6.7) | Likert scale (adjectives used as anchors at each end of the 9-point scale; not all positive responses resulted in a high score; some items required reverse coding before scoring)106 items: items of each subscale are averaged | Feelings of well-being, amount of concentration, visual observations, sweat intensity, muscle and joint comfort, audible environment | Exercise Behavior Analysis; Leisure Time Exercise Questionnaire; Leisure Index of the Minnesota Heart Health Program Physical Activity Questionnaire; Exercise Benefits/ Barrier Scale | ***Internal Consistency*** *via* ***Cronbach's α:*** *6 factors (feelings of well-being, amount of concentration, visual observations, sweat intensity, muscle and joint comfort, and audible environment)* = 0.75–0.92<br>***Construct Validity:*** *initial 9-factor variance = 61.6%; Eigenvalue for all items* = 1.3–22.6; *Statistical differences between low and high exercisers among the following factors per Exercise Behavior Analysis: feelings of well-being* $p$ = 0.010; *amount of concentration* $p < 0.001$; *muscle joint discomfort* $p$ = 0.004; *Statistical differences between low and high exercisers among the following factors per Leisure Index of the Minnesota Heart Health Program Physical Activity Questionnaire: feelings of well-being* = 0.008; *amount of concentration* $p < 0.001$; *sweat intensity* $p$ = 0.002; *muscle and joint discomfort* $p < 0.001$; *Statistical differences between low and high exercisers among the following factors per Leisure Time Exercise Questionnaire: feeling of well-being* $p$ = 0.042; *amount of concentration* $p$ = 0.002; *muscle and joint discomfort* $p$ = 0.008 |
| Schneider, 2009 [46] | Women: Study 1: 82.2 (4.0)<br>Study 2: 71.5 (4.8) | Likert scale (adjectives used as anchors at each end of the 9-point scale; not all positive responses resulted in a high score; some items required reverse coding before scoring) 37 items | Clear and alert thinking, feeling energetic, improved movements, heart pumping perceptions, visual surroundings, audio environment, amount of concentration, sweat intensity, stiff and sore, social support, and enjoyment | Exercise-Induced Feeling Inventory, Subjective Exercise Experiences Scale | ***Internal Consistency*** *via* ***Cronbach's α***: **Total = 0.87;** *11 factors (clear and alert thinking, feeling energetic, improved movements, heart pumping perceptions, visual surroundings, audio environment, amount of concentration, sweat intensity, stiff and sore, social support, and enjoyment)* = 0.70–0.91<br>***Construct Validity:*** *Factor loading* = 0.70–0.95 |
| **Inventory of Physical Activity Barriers (IPAB)** | | | | | |
| Wingood et al. 2021a [49] | Community-dwelling adults ≥ 50 years = 58.2 (7.0) | Likert scale (1= never; 5 = always) 40 items averaged | Personal, social, and environmental | Physical Activity Vital Sign | ***Internal Consistency*** *via* ***Cronbach's α on initial 81-items:*** *Total = 0.97; 3 factors (personal, social, and environmental)* = 0.75–0.96<br>***Construct Validity*** *via* ***comparing those who met/did not meet weekly 150 min of moderate physical activity levels:*** *Total* $p$ = 0.01, *3 factors (personal, social, and environmental)* $p < 0.001$<br>***Content Validity*** = 100% *of Delphi participants agreed on keeping 40 items* |
| Wingood et al. 2021b [3] | Community-dwelling adults ≥ 50 years = 70.1 (8.5) | Likert scale (1= never; 5 = always) 27 items averaged | Environmental, physical health, physical activity-related motivation, emotional health, external factors, skills, social, and energy (stand- alone item) | Physical Activity Vital Sign | ***Internal Consistency*** *via* ***Cronbach's α:*** *Total* = 0.91; *7factors (environmental, physical health, physical activity-related motivation, emotional health, external factors, skills, social)* = 0.69–0.85<br>***Test-Retest Reliability*** *via* ***Intraclass Correlation Coefficient*** = 0.99<br>***Construct Validity:*** *7-factor variance* = 64.2%; *Factor loading* = 0.531–1.031; *Comparing those who met/did not meet weekly 150 min of moderate physical activity levels* $p < 0.001$ |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability, Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| Wingood et al. 2022 [61] | Community-dwelling adults = 73 (7.6) | | | | ***Internal Consistency*** *via* ***Cronbach's α:*** *Electronic* = 0.92; *Pen-and-Paper* = 0.93<br>***Construct Validity:*** *Both formats differentiated between those who meet the recommended levels of activity and those who do not* ($p < 0.001$)<br>***Cross-Validation between Electronic and Pen-and-Paper Format:*** *Intraclass Correlation Coefficient* = 0.94; *Kappa* = 0.68; *Mean difference between the two formats* = 0.002 ($p = 0.96$) |
| **Neighborhood Park Quality** | | | | | |
| Bai et al. 2013 [52] | Community-dwelling = 50.9 (16.5) | Likert scale (1 = strongly disagree; 5 = strongly agree) 7 items averaged | Park quality | Behavioral Risk Factor Surveillance System | ***Internal Consistency*** *via* ***Cronbach's α*** = 0.91<br>***Test-Retest Reliability*** *via* ***Intraclass Correlation Coefficient across 7 items*** = 0.49–0.76 |
| **Physical Activity Acceptance Questionnaire (PAAQ)** | | | | | |
| Butryn et al. 2015 [54] | Overweight and obese adults = 50.04 (10.05) | Likert scale (1 = never true; 7 = always true) 10 items summed | Cognitive acceptance, Behavioral commitment | Accelerometry and International Physical Activity Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α***: *Total* = 0.85; *2 factors (cognitive acceptance and behavioral commitment)* = 0.82–0.84<br>***Construct Validity*** *via* ***Correlations:*** *Acceptance and Action Questionnaire-II* = −0.14; *Barriers to Physical Activity* = −0.33 to −0.20; *Physical Activity (accelerometer)* = 0.12–0.26 |
| **Physical Fitness and Exercise Activity of Older Adults Scale- Barrier portion** | | | | | |
| Melillo et al. 1997 [56] | Older adults = 68.95 | Likert scale (1 = strongly agree; 4 = strongly disagree)<br>13 items summed | Barriers | Physical Fitness and Exercise Activity of Older Adults Scale | ***Internal Consistency*** *via* ***Cronbach's α*** = 0.727<br>***Test-Retest Reliability*** *via* ***Spearman's Correlation Coefficient*** = *0.751, p < 0.0001*<br>***Construct Validity*** *via* ***Correlation with Self-reported Exercise Frequency* = −0.1342**, $p = 0.141$ |
| **Questionnaire of Barriers to Physical Activity Practice (QBPAP)** | | | | | |
| Gobbi et al. 2012 [57] | Community-dwelling-age ≥ 60 | Dichotomous (yes/no) 22 items (barriers) | Barriers | International Physical Activity Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α*** = 0.61 |
| **Safe and Fit Environments (SAFE)** | | | | | |
| Patch et al. 2019 [58] | Middle-aged adults = 57.5 (6.3); Older adults = 76.1 (6.3) | 26 scales (Crime Prevention through Environmental Design-surveillance, maintenance, access control, territorial reinforcement, collective efficacy, neighborhood integration, victimization-witnessing crime, hearing about crime, crime information sources, evaluation of risk, value/incivilities, street efficacy, fear of crime, protective behaviors, avoidant behaviors, new-related avoidant behavior, | 17 constructs: not listed | None | ***Test-Retest Reliability*** *via* ***Intraclass Correlation Coefficient:*** *For Middle-aged adults across 26 scales* = −0.086–0.883<br>*For Older adults across 26 scales* = −0.081–0.885 |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability, Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| | | obligatory behaviors, community participation, no behavioral response, and getting out of the house) 155 total items: each one has different scoring | | | |
| **Self-Efficacy for Exercise (SEE)** | | | | | |
| Resnick and Jenkins, 2000 [16] | Older adults in retirement community = 85 (6.2) | Likert (0 = not confident; 10 = very confident) 9 items averaged (summed and divided by number of responses; score indicates the strength of efficacy expectations) | Self-efficacy for exercise | Exercise activity | ***Internal Consistency*** *via* ***Cronbach's α*** = 0.92<br>***Squared Multiple Correlation Coefficients across 9 items:*** *0.38–0.76*<br>***Validity:*** *When controlled for age and gender, SEE scores significantly predicted exercise activity, accounting for 30% of the variance in exercise activity* |
| **Social-Cognitive Theory Based Scale** | | | | | |
| Rosenkranz et al. 2018 [33] | Adults = 51 (13.3) | Continuous (0 = cannot do at all; 100 = highly certain can do) 16 items averaged | Task self-efficacy, barriers self-efficacy, personal barriers self-efficacy, and conflicting barriers self-efficacy, mental outcome, and physical outcome expectations | Stages of Change | ***Internal Consistency*** *via* ***Cronbach's α***: *6 factors (task self-efficacy, barriers self-efficacy, personal barriers self-efficacy, and conflicting barriers self-efficacy, mental outcome, and physical outcome expectations)* = 0.807–0.930<br>***Construct Validity:*** *Factor loading* = 0.750–0.996; *Significant differences between participants categorized in action/maintenance stages, as compared to participants in pre-contemplation/ contemplation/ preparation stages* $p < 0.001$ |

**Table 2.**

PA participation barrier assessment tools for community-dwelling adults 50 years and older with specific diagnoses.

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability. Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| **Community-Dwelling Adults 50 Years and older with Cardiovascular Diagnosis** | | | | | |
| **Barriers to appropriate physical activity in CAD patients (BAPAC) questionnaire** | | | | | |
| Joussain et al. 2017 [35] | Phase III cardiac rehab > 1 year = 64.8 (8.7) Referred to cardiac rehab = 55.7 (11.7) stable CAD = 60.4 (7.2) | Visual Analogue Scale (anchors: 1 = totally agree; 5 = totally disagree) 11 items summed | Lack of: interest, motivation, enjoyment, and priority | Disablement in the Physical Activity Scale | ***Internal Consistency*** *via* **Cronbach's α** = 0.815<br>***Test-Retest Reliability*** *via* ***intraclass correlation coefficient t*** = 0.95<br>***Face Validity:*** satisfactory by the patients and experts<br>***Construct Validity:*** *1st 4 factors variance* = 79% |
| **Fear of Activity in Situations-Heart Failure (FActS-HF 15)** | | | | | |
| Hoffman et al. 2018 [71] | Heart failure = 67.1 (12.1) | Likert (0 = not at all; 5 = very strong) 15 items (mod and vig intensity) *24 items (light, mod, and vig intensity) averaged | 1- factor solution: fear of activity<br>2- components: affective and cognition | Accelero-meter Activity Sensor Move II | ***Internal Consistency*** *via* **Cronbach's α:** *24-item Total* = 0.98; 3 *intensities (light/mod/vigorous)* = 0.94–0.95; *2 components (affective and cognition*) = 0.97– 0. 98 *15-item total* = 0.97; *2 intensities (mod/vig)* = 0.94–0.95; 2 *components (affective and cognition)* = 0.96– 0.97<br>***Test-Retest Reliability*** *via* **Correlations:** *24-item total* = 0.82; *3 intensities (light/mod/vig)* = 0.76–0.82; *2 components (affective and cognition)* = 0.78–0.85; *15- item total* = 0.82; *2 intensities (mod/vig)* = 0.81–0.82; *2 components (affective and cognition)* = 0.78–0.86<br>***Construct Validity:*** *Eigenvalue- 24-item* = 16.04; *15-item* = 10.55; *1st factor variance* = 72%; *Score differed between the intensity levels (vig > mod > light)* = *p* < 0.01<br>***Convergent validity*** *via* **bivariate correlations:** *Tampa Scale for Kinesiophobia* = 0.70; *Social Anxiety* =0.46; *Heart failure-related distress score* = 0.47; *Cardio Fitness group* = −0.29; *Less informed about heart failure* = 0.21; *Comorbidities* = 0.33; Level of education = −0.21<br>***Discriminate validity*** *via* **bivariate correlations:** *STADI-state depression* = 0.29; *STADI-trait depression* = 0.47: *Social anxiety score* = 0.46: *NEO-FFI extraversion* = −0.33 |
| **Community-Dwelling Adults 50 Years and Older with Diabetes** | | | | | |
| **Health Beliefs Related to Cardiovascular Disease Scale (HBCVD)** | | | | | |
| Tovar et al. 2010 [34] | Diabetes = 57 (12.6) | Likert (1 = strongly disagree; 4= strongly agree) 25 items summed | Susceptibility, severity, benefits, and barriers | None | ***Internal Consistency*** *via* **Cronbach's α**: *4 factors (Susceptibility, severity, benefits, and barriers)* = 0.61–0.93<br>***Test-Retest Reliability*** *via* ***Intraclass Correlation Coefficient:*** *4 factors (Susceptibility, severity, benefits, and barriers)* = 0.130–0.621 (*p* = 0.3–0.9)<br>***Construct Validity:*** *Variance* = 80.6%%; *Each item's factor loading* = 0.34–0.88 |
| **Influences on Physical Activity Instrument (IPAI)** | | | | | |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability. Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| Donahue et al. 2006 [50] | Diabetes = 54 (14) | Likert (1= strongly agree; 4= strongly disagree) 21 items averaged | Individual influences, support influence, environmental influence | Behavioral Risk Factor Surveillance System | ***Internal Consistency** via **Cronbach's α**: 3 factors (Individual influences, support influence, environmental influence)* = 0.53–0.68<br>***Construct Validity:** Individual influence (3 factors) variance* = 60%; *Support Influences (1 factor) variance* = 60%; *Environmental influences (2 factors) variance* = 65% |
| **Self-Efficacy to Engage in Physical Activity** | | | | | |
| Rachmah et al. 2019 [59] | Community-dwelling with diabetes = 66.8 (5.3) | Likert (0 = 0% confidence;100 = 100% confidence) 10 items averaged | Self-efficacy | Global Physical Activity Questionnaire | ***Internal Consistency** via **Cronbach's α:** Total* = 0.682<br>***Construct Validity:** BMI difference p* = 0.072; *PA level p* = 0.001; *Sedentary behaviors* = 0.002 |
| **Self-Efficacy to Overcome Barriers** | | | | | |
| Rachmah, 2019 [59] | Community-dwelling with diabetes = 66.8 (5.3) | Likert (0 = 0% confidence; 100 = 100% confidence) 8 items averaged | Self-efficacy | Global Physical Activity Questionnaire | ***Internal Consistency** via **Cronbach's α:** Total* = 0.576<br>***Construct Validity:** BMI difference p* = 0.436; *PA level p* = 0.001; *Sedentary Behaviors* = 0.064 |
| **Community-Dwelling Adults 50 Years and Older with Hemodialysis** | | | | | |
| **Dialysis Patient-Perceived Exercise Benefits and Barriers Scale (DPEBBS)** | | | | | |
| Zheng et al. 2010 [41] | Receiving hemodialysis = 59.67 (14.28) | Likert (1 = strongly disagree; 4 = strongly agree) 24 items summed | Daily life, symptoms, physical function, care needs, exercise-associated Untoward Outcomes, and Information | 7-Day Physical Activity Recall | ***Internal Consistency** via **Cronbach's α:** Total* = 0.87, *6 factor range (daily life, symptoms, physical function, care needs, exercise-associated)* = 0.58–0.86<br>**Corrected Item-Total Correlation (24 items)** = 0.33–0.91<br>***Test-Retest Reliability** via **Correlation:** Total* = 0.84, *6-factor range (daily life, symptoms, physical function, care needs, exercise-associated)* = 0.67–0.95<br>***Construct Validity:** 6-factor variance* = 57%; *Each item's factor loading* = 0.29–0.94<br>***Criterion-Related Validity** via **Correlation:** Exercise Barriers and Benefits scale* = 0.57–0.81; P*hysical Activity Recall* = 0.64 |
| **Community-Dwelling Adults 50 Years and Older with History of Cancer** | | | | | |
| **Exercise Barrier Self-Efficacy Scale** | | | | | |
| Rogers et al. 2006 [32] | Female patients receiving treatment for breast cancer = 59 (14) | Likert Scale (0 = not at all confident; 100% = extremely confident) 9 items averaged | Self-efficacy | Non-standardized question | ***Internal Consistency** via **Cronbach's α*** = 0.96<br>***Test-Retest Reliability** via **Correlation*** = 0.89 ($p < 0.001$) |
| **Barriers Self-Efficacy** | | | | | |
| Rogers et al. 2015 [51] | History of neck/head cancer = 63 (11) | Likert Scale (0 = not at all confident; 100% = extremely confident) 14 items averaged | Motivational and physical health | Godin Leisure-Time Physical Activity Questionnaire | Reduced item scales:<br>***Internal Consistency** via **Cronbach's α*** = 0.95 ***Test-Retest Reliability** via **Correlation*** = 0.67 ($p < 0.001$) |
| **Lymphedema-Specific Exercise Barriers Self-Efficacy** | | | | | |
| Buchan et al. 2015 [51] | Individuals with cancer-related | Likert (0 = not at all confident; 100% = | Self-efficacy | Active Australia Study | ***Internal Consistency** via **Cronbach's α*** = 0.93<br>***Test-Retest Reliability** via **Intraclass Correlation*** |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability. Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| | lymphedema = 59.3 (95% Cl 53.1–59.5) | extremely confident) 5 items averaged | | | ***Coefficient:*** *Total* = 0.67 ($p < 0.001$); *Items* = 0.44–0.65 ($p < 0.01$)<br>***Construct Validity*** *via* **Correlates:** *with Initial 10-Item General Barrier Scale* = 0.61 ($p < 0.01$)<br>***Criterion validity*** *via* ***differentiate between performing and not performing physical activity:*** $p = 0.24$ |
| **Perceived Barriers Interference** | | | | | |
| Rogers et al. 2015 [36] | History of neck/head cancer = 63 (11) | Likert scale (1= never; 5= very often) 12 items summed | Motivational, physical health, time, and environment | Godin Leisure-Time Exercise Questionnaire | Reduced item scales: ***Internal Consistency*** *via* ***Cronbach's*** $\alpha$ = 0.84 ***Test-Retest Reliability*** *via* ***correlation*** = 0.83 ($p < 0.0001$) |
| **Physical Activity Acceptance Questionnaire (PAAQ)** | | | | | |
| Butryn et al. 2015 [54] | Long-term breast cancer survivorship = 52.98 (11.56) | Likert (1 = never true; 7 = always true) 10 items summed | Cognitive acceptance, behavioral commitment | Accelerometry and International Physical Activity Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α:*** *Total* = 0.91; *subscale cognitive acceptance* = 0.87; *subscale behavioral commitment* = 0.89<br>***Construct Validity Factor Analyses:*** *2-factor* variance = 63%; *Factor loading of 10-items* = 0.57–0.78<br>***Construct Validity*** *via* ***Correlation Coefficient:*** *Five-factor mindfulness* = 0.47; *Body satisfaction* = −0.38; *Depressive symptoms* = −0.42; *Physical activity levels (self-report)* = 0.56; *Female sexual functioning* = 0.27 |
| **Community-Dwelling Adults 50 Years and Older with Musculoskeletal Diagnosis and Mobility Limitations** | | | | | |
| **Barriers to Physical Activity Questionnaire for People with Mobility Impairment (BPAQ-MI)** | | | | | |
| Vasudevan et al. 2015 [38] | Difficulty walking a 0.25 miles/ doing 10 stairs without a cane, walker, or wheelchair = 55.2 | Likert scale (0 =very small; 5 =very big) 63 items summed | Intrapersonal, interpersonal, organizational, and community | Physical Activity and Disability Survey (PADS) | ***Internal Consistency*** *via* ***Cronbach's α:*** *4 factors (intrapersonal, interpersonal, organizational, and community)* = 0.792– 0.935<br>***Test-Retest Reliability:*** no significant difference in subscale scores<br>***Content Validity:*** *via* Delphi study but not reported<br>***Criterion Validity*** *via* ***Correlations across 4 Factors (intrapersonal, interpersonal, organizational, and community):*** *Exerciser* = −0.166 – −0.241; *PT/OT* = −0.163; *Inactivity* = 0.186 – 0.198 |
| **Exercise Barriers for Adults with Physical Disability** | | | | | |
| Cardinal et al. 2004 [30] | Report of experiencing a physical disabilities = 52.5 (13.9) | Likert scale (1 = never; 3 = often) 14 items summed | Exercise barriers | Transtheoretical Model Constructs (Behavioral Processes, Cognitive Processes, Self-efficacy, Pros, and Cons) | ***Internal Consistency*** *via* ***Cronbach's*** $\alpha$: 0.81<br>***Criterion Validity*** *via* ***Bivariate Correlation Coefficients across Transtheoretical Model:*** *Behavioral process* = −0.18; *Cognitive process* = 0.06; *Self-efficacy* = −0.29; *Pros* = −0.02; *Cons* = 0.32 |
| **Evaluation of the Perception of Physical Activity (EPPA)** | | | | | |
| Coste et al. 2020 [47] | Osteoarthritis = 67.9 (7.9) | Likert scale (0 = strongly disagree; 4 = strongly agree) 24 items averaged | Motivation, facilitators, barriers, and beliefs | International Physical Activity Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α:*** *4-factors (Motivation, Facilitators, Barriers, and Beliefs)* = 0.64–0.78<br>***Test-Retest Reliability*** *via* ***Intraclass Coefficient:*** *4-factors (motivation, facilitators, barriers, and beliefs)* = 0.66–0.89<br>***Face Validity:*** determined but no values provided<br>***Construct Validity:*** *factor loading for items* = 0.41–0.68 |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability. Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| | | | | | ***Convergent Validity*** *via* ***Spearman correlation:*** *Motivation subscale and KOFBeQ* = 0.23; *WOMAC Physical Function* = −0.26; *Facilitators subscale and KOFBeQ* = −0.11; *WOMAC physical function* = −0.24; *Barriers subscale and KOFBeQ* = −0.035; *WOMAC physical function* = −0.39; *Beliefs subscale and KOFBeQ* = −0.43; *WOMAC physical function* = −0.39 |
| **Health Belief Model** | | | | | |
| Qiao et al. 2021 [48] | Pre-frail = 71.5 (6.8) | Likert scale (1 = strongly disagree; 5 = strongly agree) 38 items – scoring not reported | Attitudes, moral norms, descriptive norms, injunctive norms, perceived behavioral control, perceived physical threat, perceived psychosocial threat, and perceived barriers | International Physical Activity Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α***: *8 factors (attitudes, moral norms, descriptive norms, injunctive norms, perceived behavioral control, perceived physical threat, perceived psychosocial threat, and perceived barriers)* = 0.80–0.98<br>***Test-Retest Reliability*** *via* ***Intraclass Correlation Coefficient:*** *8 factors (attitudes, moral norms, descriptive norms, injunctive norms, perceived behavioral control, perceived physical threat, perceived psychosocial threat, and perceived barriers)* = 0.71–0.85<br>***Construct Validity:*** *8-factor variance* = 71.3%<br>***Convergent Validity:*** *average variance extracted* ≥ 0.50; *composite reliability* ≥ 0.70 |
| **Osteoporosis Health Belief** | | | | | |
| Kim et al. 1991 [53] | Osteoporosis = 74 | Likert scale (1 = strong disagreement; 5 = strong agreement) 35 items – scoring not reported | Susceptibility, benefits exercise, barriers exercise, seriousness, and health motivation | Athletic Pursuits Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α:*** 5 Factors (Susceptibility, Benefits Exercise, Barriers Exercise, Seriousness, and Health Motivation) = 0.61–0.80<br>***Inter-rater reliability*** = 99.8%<br>***Construct Validity:*** *5-factor variance* = 49.3%; *Item loading* = 0.45–0.80.<br>***Discriminant Validity by Low and High Levels of Exercise*** *via* ***standardized discriminant coefficient, (Wilks' lambda and F):*** *Health motivation* = −0.717 (0.907, 15.20); *Barriers-exercise* = 0.644 (0.876, 5.23); *Susceptibility* = −0.284 (0.864, 1.96): *Benefit-exercise* = 0314 (0.855. 1.63): *Seriousness* = −0.095 (0.854, 0.17) |
| **Perceived Social Cohesion** | | | | | |
| Gebauer et al. 2020 [55] | Joint Pain = 64.6 (0.26) | Likert scale (1 = strongly agree; 4 = strongly disagree) 4 items summed | Social cohesion | Non-standardized question | ***Internal Consistency*** *via* ***Cronbach's α*** = *0.893* |
| **Perceived Walkability** | | | | | |
| Gebauer et al. 2020 [55] | Joint Pain = 64.6 (0.26) | Likert scale (0 = not walkable; 6 = highly walkable) 6 items summed | Walkability | Non-standardized question | ***Internal Validity*** *via* **Kuder-Richardson-20** = 0.793 |
| **Community Dwelling Adults 50 Years and Older with Neurological Diagnoses** | | | | | |
| **Cerebrovascular Attitudes and Beliefs Scale (CABS-R)** | | | | | |
| Sullivan et al. 2010 [39] | Stroke survivors 50+ years old: Time 1 = | Likert scale (1= strongly disagree; 5= strongly agree) 13 items averaged | Severity, susceptibility, benefits, barriers | None | ***Internal Consistency:*** *Cronbach's α of 3 Factors* (benefits, barriers, and susceptibility) = 0.64–0.87<br>*Item-Total Correlation of 3 Factors* = 0.29–0.68 |

| References | Population = Mean Age Years (SD) | Type of Scale and Scoring | Constructs/ Sub-scales | Reference Test | Clinimetric properties presented (e.g. Internal Consistency, Test-Retest Reliability. Face Validity, Content Validity, Construct Validity, Other Validity, Logistic Regression) |
|---|---|---|---|---|---|
| | 56.46 (5.44); Time 2 = 55.78 (5.20) | | | | ***Test-Retest Reliability:*** *4 factors (severity, susceptibility, benefits, barriers)* = 0.348–0.747<br>***Construct Validity:*** *4-factor variance* = 53.96% |
| **Spousal Support for PA** | | | | | |
| Stoeckel and Kasser 2022 [60] | Persons with multiple sclerosis = 55.72 (10.72) | Likert (1 = not at all; 5= completely) 5 items averaged | Supportive communication, expectations, bonding, and social control | Godin Leisure-Time Exercise Questionnaire | ***Internal Consistency*** *via* ***Cronbach's α:*** *4 factors (supportive communication, expectations, bonding, and social control)* = 0.804–0.936 |

* Abbreviation: light- light intensity; mod- moderate intensity; vig- vigorous intensity.