



## Review Article

# Falls efficacy: Extending the understanding of self-efficacy in older adults towards managing falls

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## Abstract

Falls efficacy is a widely studied construct. The understanding of falls efficacy has evolved over time. Falls efficacy was initially perceived to be suitably used as a measure of fear of falling. However, further research suggested that falls efficacy and fear of falling are distinct constructs, and therefore, would be inappropriate to be used as a proxy. Instead, some researchers posited that falls efficacy is synonymous with balance confidence. Falls efficacy has been conventionally understood as the perceived ability of individuals to perform activities without losing balance or falling. A recently conducted systematic review by the authors on existing falls efficacy related measures had revealed a fresh perspective of recognising falls efficacy as a perceived ability to manage a threat of a fall. Falls efficacy, with a broadened interpreted construct, relates to the individual's perceived self-efficacy of performing necessary actions needed in different scenarios, including pre-fall, near-fall, fall-landing and completed fall. The conventional interpretation of falls efficacy needs a rethinking of perspective. An extended understanding of falls efficacy would provide an integral approach towards improving the agency of individual to deal with falls and would enhance person-centred care.

**Keywords:** Falls efficacy, Older Adults, Person-centred care, Physiotherapy, Rehabilitation

## Introduction

Falls efficacy was first introduced by Tinetti et al.<sup>1</sup> to our community of clinicians and researchers in the field of gerontology as a potential construct used to determine fear of falling. Using Bandura's self-efficacy theory<sup>2</sup>, fear of falling was interpreted as low perceived self-efficacy in performing various activities, taking into account one's personal risk to experience a potential fall. The approach of assessing fear of falling was to ask individuals about their confidence in performing various activities without falling. Those who reported a significant lack of confidence were viewed to have a fear of falling<sup>1</sup>. This initial conceptualisation of falls efficacy and fear of falling used in parallel led to much inquiry towards the perceived ability in older adults to manage falls<sup>3</sup>. Over the last three decades, falls-related research has been focused on providing empirical evidence for different rehabilitation

approaches on their efficiency and effectiveness towards improving falls efficacy or to address the fear of falling<sup>4,5</sup>. The understanding of falls efficacy has evolved. This article aims to provide a review of falls efficacy, highlight some current rehabilitation practices, and reiterate the importance of person-centred care through our reflection of falls efficacy.

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Construct	Definition
Falls efficacy	Perceived self-efficacy to perform activities of daily living without falling <sup>1</sup>
<b>Instruments</b>	
FES-10 <sup>1</sup> , MFES-11 <sup>56</sup> , MFES-12 <sup>5</sup> , MFES-13 <sup>57</sup> , MFES-14 <sup>58</sup> , PAMFR <sup>21</sup> , PAMF <sup>5</sup>	
Construct	Definition
Fear of falling	The lasting concerns about falling that leads to an individual avoiding activities that one remains capable of performing <sup>8,59</sup>
<b>Instruments</b>	
FES-I <sup>13</sup> , Icon-FES <sup>15</sup> , GFFM <sup>60</sup> , UIC FFM <sup>61</sup> , SAFE <sup>62</sup> , FFABQ <sup>63</sup> , FFQ-R <sup>64</sup>	
Construct	Definition
Balance confidence	The individual's belief about their ability to maintain balance whilst performing activities of daily living <sup>14</sup>
<b>Instruments</b>	
ABC-6 <sup>65</sup> , ABC-15 <sup>66</sup> , ABC-16 <sup>14</sup> , CONFBal <sup>67</sup>	
<i>FES: Falls Efficacy Scale, MFES: Modified Falls Efficacy Scale, PAMFR: Perceived Ability to Prevent and Manage Fall Risks, PAMF: Perceived Ability to Manage Risk of Falls or Actual Falls, FES-I: Falls Efficacy Scale – International, Icon-FES: Iconographical Falls Efficacy Scale, GFFM: Geriatric Fear of Falling Measure, UIC FFM: University of Illinois at Chicago Fear of Falling Measure, SAFE: Survey of Activities and Fear of Falling in the Elderly, FFABQ: Fear of Falling Avoidance Behaviour Questionnaire, FFQ-R: Fear of falling questionnaire revised, ABC: Activities specific Balance Confidence Scale, CONFBal: CONFBal scale of balance confidence</i>	

**Table 1.** List of measures used for different constructs.

## Understanding falls efficacy

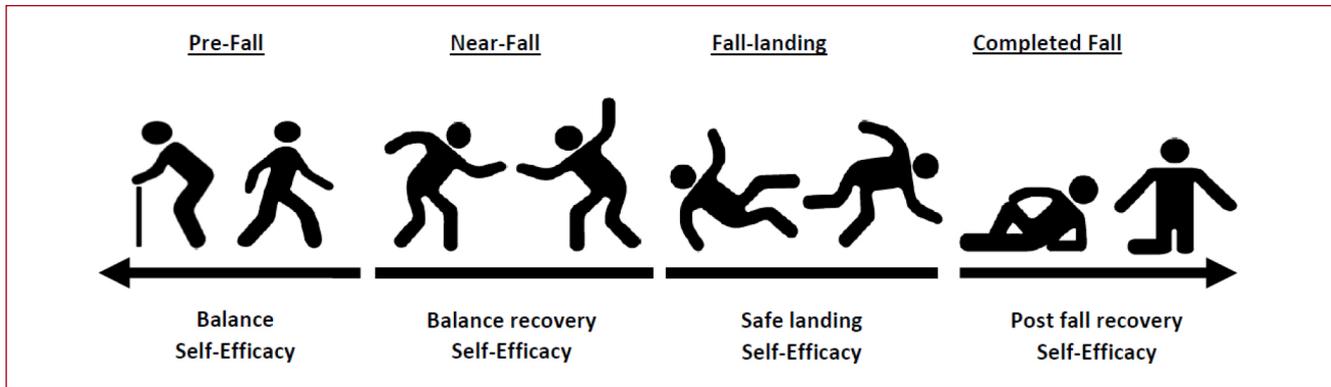
Self-efficacy relates to the individual's perception of one's capabilities to successfully complete a specific task or perform in a specific scenario<sup>6</sup>. Self-efficacy is viewed as a measurable cognitive mechanism that mediates between thoughts/emotions and actions<sup>7</sup>. In contrast, the construct of fear is accounted for by both emotional aspects, e.g. anxiety and behavioural elements, e.g. activity avoidance<sup>8</sup>. Fear of falling commonly describes an exaggerated concern of falling that leads to excess restriction of activities<sup>9</sup>. Given the different nature of self-efficacy and fear, different authors including Li et al.<sup>10</sup>, Hotchkiss et al.<sup>11</sup>, Hadjistavropoulos et al.<sup>12</sup> and Hughes et al.<sup>8</sup> have attempted to distinguish between falls efficacy and fear of falling.

Falls efficacy has been defined as the perceived self-efficacy to perform activities of daily living without falling<sup>1</sup>. Stemmed from this perspective, the Falls Efficacy Scale (FES), the first measure of falls efficacy, was developed by clinicians to identify the “most important activities essential to independent living, that while requiring some position change or walking, would be safe and non-hazardous to most elderly persons”<sup>1</sup>. Fear of falling, on the other hand, has been defined as the lasting concerns about falling that leads to an individual avoiding activities that one remains capable of performing<sup>8</sup>. An early measure for this fear, the Falls Efficacy Scale – International (FES-I), was developed by colleagues from the Prevention of Falls Network Europe (ProFaNE). The original FES has been modified to assess the level of concern about falling when carrying out various activities<sup>13</sup>. Another construct, balance confidence, has also been studied

closely alongside falls efficacy. The first measure of balance confidence, the Activities-specific Balance Confidence Scale (ABC), was constructed by having similar questions used for falls efficacy posed to clinicians and older adults<sup>14</sup>. Recognising that the measures of falls efficacy and balance confidence had high correlations, Hadjistavropoulos et al.<sup>3</sup> posited that falls efficacy had a tautological relationship to balance confidence and that the two constructs should be viewed to be “equivalent and interchangeable”.

Since the original development of the FES and the ABC, different methodologies have been used to develop other measures for the different falls-related psychological constructs. In essence, measures of falls efficacy or balance confidence have been designed to understand the perceived ability of individuals to maintain balance while performing various activities. On the other hand, measures of fear of falling aim to identify the level of concerns about falling among older adults spanning different activities. Some widely used measures for the different constructs are listed in Table 1. The term “Falls Efficacy” was retained in the title for the measure of fear of falling so as to acknowledge the historical development of the scale<sup>13</sup>. It is necessary to reiterate that the fear measures such as the FES-I<sup>13</sup> and the Iconographical FES (Icon-FES)<sup>15</sup> were conceptualised to measure the concerns of individuals about falling or fear of falling, and not falls efficacy.

As falls-related research advances, the interpretation of falls efficacy has changed. The initial understanding of falls efficacy, which had been interpreted as a measure of fear of falling in the 1990s, had several advantages<sup>1</sup>. First,



**Figure 1.** Extended interpretation of falls efficacy from the Falls-related Self-efficacy Continuum Model (Reproduced with permission (20), Copyright 2021, BMC Geriatrics).

the operationalisation allowed objective, reliable and valid strategies to be developed based on measuring efficacy across a range of activities. Second, a measure of fear of falling could be made using a continuous scale response option. Third, associating fear with self-efficacy mitigated the perception that fear of falling was a psychiatric condition. However, further research revealed that falls efficacy and fear of falling, despite being highly correlated, were distinct constructs and should be measured separately by different measurement instruments<sup>3</sup>. Falls efficacy was viewed to have a tautological relationship with balance confidence in the 2000s<sup>3</sup> and was addressed through clinical strategies focused on improving balance, strength and increasing the level of physical activities among older adults<sup>16,17</sup>. To avoid any misinterpretation of the construct of interest, several authors such as Jorstad et al.<sup>18</sup>, Moore et al.<sup>19</sup> and Hughes et al.<sup>8</sup> called for the clinical and research community to clarify their construct of interest. These included areas in falls efficacy amongst other falls-related psychological constructs, including fear of falling, balance confidence and outcome expectancy, alongside selected measures.

Recently, a systematic review of different falls-efficacy related measurement instruments suggested that the interpretation of falls efficacy should be extended beyond the synonymous interpretation of falls efficacy and balance confidence<sup>20</sup>. To justify that call, two fall efficacy related scales, the “Perceived Ability to Prevent and Manage Fall Risks” (PAMF)<sup>5</sup> and the “Perceived Ability to Manage Risk of Falls or Actual Falls” (PAPMFR)<sup>21</sup>, were highlighted among eighteen other measurement instruments. Developers of PAMF and PAPMFR conceptualised falls efficacy based on a formative model, where many measures were developed based on a reflective model to assess falls efficacy. The distinction between formative and reflective models was based on asking oneself whether the indicator “forms” or contributes to an underlying construct or if the indicator “reflects” an underlying construct (using a “thought test”),

i.e. do we expect the items to change when the construct changes?<sup>22</sup> The PAMF included the following items: (1) finding ways to get up if they fell; (2) finding ways to reduce falls; (3) protecting themselves if they do fall; (4) increasing their physical strength and (5) getting steadier on their feet. The PAPMFR listed items including: (1) steadiness on their feet; (2) balance while walking; (3) ability to walk in their homes; (4) ability to walk outdoors; (5) ability to prevent falls and (6) ability to find ways to get up if they fell. It was viewed that the items in both measures were used to form an understanding of falls efficacy. Yoshikawa and Smith<sup>21</sup> reported that the items in PAPMFR aimed to cover a wide range of fall-related perceptions, which were addressed through their multi-modal falls management program.

### A new perspective of falls efficacy

Drawing upon previous research, Soh et al.<sup>20</sup> proposed that falls efficacy should be considered across a continuum from: (1) pre-fall; (2) near-fall; (3) fall-landing and (4) completed fall (Figure 1) to provide a complete conceptual understanding of falls efficacy. In the pre-fall domain, balance self-efficacy or balance confidence refers to the perceived self-efficacy of performing activities without losing balance or falling. In the near-fall domain, balance recovery self-efficacy or balance recovery confidence relates to the perceived ability to recover balance in response to perturbations. For example, one might quickly grab onto a pole or take a few steps to recover balance after a trip or a slip. When the individual has inadequate reactive balance recovery abilities to regain balance, the fall is viewed as a consequential event<sup>23</sup>. Balance recovery strategies such as compensatory stepping and reach-to-grasp are necessary skills to arrest a fall<sup>24,25</sup>. Balance recovery confidence differs from balance confidence, given that balance recovery confidence focuses on the perceived ability of one’s reactive balance recovery skills to regain balance<sup>26</sup>. Two other domains in the extended

Domain	Construct	Focus of self-efficacy
Pre-fall	Balance self-efficacy	On the individual's perceived performance of activities without losing balance or falling
<b>Instruments</b>		
FES-10 <sup>1</sup> , MFES-1 <sup>56</sup> , MFES-12 <sup>5</sup> , MFES-13 <sup>57</sup> , MFES-14 <sup>58</sup> , Five items in PAMFR <sup>21</sup> : "Steadiness on their feet", "Balance while walking", "Ability to walking in their homes", "Ability to walk outdoors", "Ability to prevent falls", GES-8 <sup>68</sup> , GES-10 <sup>69</sup> , Three items in PCOF <sup>5</sup> : "I can reduce my risk of falling", "There are things I can do to keep myself from falling", "Falling is something I can control", Three items in PAMF <sup>5</sup> : "Finding ways to reduce falls", "Increasing their physical strength, "Getting steadier on their feet", BSPT <sup>70</sup> , ABC-6 <sup>65</sup> , ABC-15 <sup>66</sup> , ABC-16 <sup>14</sup> , CONFBal <sup>67</sup>		
Domain	Construct	Focus of self-efficacy
Near-fall	Balance recovery self-efficacy	On the individual's perceived ability to recover balance from different types of perturbations e.g. a slip or a trip or a loss of balance from volitional movements.
<b>Instruments</b>		
No measure available. A scale of balance recovery confidence <sup>71</sup> has been developed by the authors. The scale is currently evaluated for its psychometric properties.		
Domain	Construct	Focus of self-efficacy
Fall-landing	Safe landing self-efficacy	On the individual's perceived ability to fall on the floor or lower ground safely
<b>Instruments</b>		
One item in Perceived Ability to Manage Risk of Falls or Actual Falls (PAMF) <sup>5</sup> : "Protecting themselves if they do fall"		
Domain	Construct	Focus of self-efficacy
Completed fall	Post fall recovery self-efficacy	On the individual's perceived ability to get up or get help after a fall
<b>Instruments</b>		
One item in PAMF <sup>5</sup> : "Finding a way to get up if they fell", one item in PAMFR <sup>21</sup> : "Ability to find a way to get up if they fall"		
<i>FES: Falls Efficacy Scale, MFES: Modified Falls Efficacy Scale, PAMFR: Perceived Ability to Prevent and Manage Fall Risks, GES: Gait Efficacy Scale, PCOF: Perceived Control over Falling, PAMF: Perceived Ability to Manage Risk of Falls or Actual Falls, BSPT: Balance Self-Perceptions Test, ABC: Activities specific Balance Confidence Scale, CONFBal: CONFBal scale of balance confidence.</i>		

**Table 2.** List of measures used for the different domains of falls efficacy.

interpretation of falls efficacy refer to the fall-landing and the completed-fall. The fall-landing domain attends to the self-efficacy of falling safely onto the ground<sup>27</sup>, whereas the completed fall domain relates to the self-efficacy to recover from the fall<sup>28</sup>. Both domains attend to the consequences of an actual fall and should, therefore, be addressed with older adults to adequately deal with the dangers of falling. From this perspective, falls efficacy should be better defined as the perceived ability to manage a potential threat of a fall.

An extended interpretation of falls efficacy has its advantages. First, it encourages researchers and clinicians to give greater consideration to the actual construct which they target to address. For example, the goal to improve the reactive balancing ability in response to perturbations; to fall safely on the ground and reduce injurious falls; or perhaps being able to get up or get help effectively after a fall. If so, what would be the appropriate measures used to assess the effectiveness of the rehabilitation program? Second, falls efficacy would not be limited as a "danger-avoidance" approach, i.e. perceived ability to avoid falls. Approaching falls management by avoiding falls provides a lacuna in the understanding for clinicians working with older adults to tackle falls. Falls efficacy should include the perceived ability

to address the fall itself (the danger), such as the loss of balance, landing impact, and post-fall recovery.

Hence, a broader interpretation of falls efficacy is needed to comprehensively understand the varying perceived abilities associated with the different demands relating to a fall. Finally, extending the interpretation of falls efficacy allows relevant measurement instruments to be appropriately used in the evaluation of the rehabilitation strategies. Bandura<sup>29</sup> stated that there is no all-purpose measure of perceived self-efficacy. Instead, perceived self-efficacy measures must be tailored to each domain of functioning that is the object of interest.

### Current rehabilitation practices for falls efficacy

Contemporary rehabilitation can be categorised based on a broader conceptual understanding of falls efficacy. Approaching current rehabilitation practices from an updated conceptual understanding of falls efficacy would provide a conceptual alignment<sup>30</sup>. A summary of measures suitable for the different domains is provided in Table 2.

### **Pre-fall domain**

Pre-fall relates to the individual performing various activities without losing balance or falling. Much research on falls prevention has focused on this domain by identifying fall risk factors and implementing interventions to address these risks. The evidence-based fall prevention interventions can be broadly categorised as single-component interventions focusing on a specific fall risk factor (e.g. muscle weakness, poor balance, psychoactive medications and home hazards) or multi-component intervention that address several modifiable risk factors<sup>31</sup>. A recent systematic review conducted by Sherrington et al.<sup>32</sup> reported that exercise programs should include aspects of balance, functional exercises and resistance exercises in order to be effective in reducing the rate of falls and the number of older adults experiencing falls living in the community. Community-based interventions promoting behavioural changes, increasing falls-prevention knowledge and reducing home hazards are also well-known approaches when working with older adults to avoid falls<sup>33,34</sup>. In the pre-fall domain, commonly used measurement instruments include the FES, modified FES and the ABC.

### **Near-fall domain**

The near-fall domain is a less studied area compared to the pre-fall domain. A near-fall is defined as a stumble event or loss of balance that would result in a fall if sufficient recovery mechanisms were not activated<sup>35</sup>. Balance recovery abilities are recognised to be crucial skills, given that the inability to recover from the loss of balance or perturbation would be considered the cause of a fall<sup>36</sup>. According to Tokur et al.<sup>37</sup>, balance recovery capabilities are needed to respond to perturbations experienced in daily activities. The inability to recover from falls caused by slips, trips and loss of balance are common initiating events leading to falls among older adults<sup>38</sup>. Rubenstein<sup>39</sup> viewed that older adults were stiffer and less coordinated compared to young adults and hence would have impaired ability to arrest a fall in response to an unexpected trip or slip. Older adults with existing comorbidities are known to have poorer balance recovery abilities, risking a higher incidence of falls<sup>40</sup>. Nascent skill-specific rehabilitation interventions (e.g. perturbation-based training) have shown promising results to improve the execution of balance recovery reactive manoeuvres<sup>41,42</sup>. Presently, there is no known measure for balance recovery confidence<sup>20</sup>, although a measure has been developed by an international multi-disciplinary study team and is currently under validation<sup>43</sup>.

### **Fall-landing domain**

Two other domains of falls efficacy should be considered to prepare older adults to adequately manage an unfortunate fall event following an irrecoverable loss of balance. The fall-landing domain relates to the individual landing at a lower level from an irrecoverable loss of balance. Some ways to

minimise physical injuries may include teaching techniques on safe landing<sup>27</sup>, as well as the use of hip protectors<sup>44</sup> or appropriately designed flooring<sup>28</sup>. However, passive interventions do not rely on the individual's perceived ability to successfully complete a task. Therefore, the outcome measures used to evaluate the effectiveness of products should suitably consider the one item from the PAMF scale<sup>5</sup>, "Protecting themselves if they do fall", to identify their sense of self-efficacy or concerns about falling using measures, such as the Falls Efficacy Scale-International<sup>13</sup>.

### **Completed fall domain**

When the individual has fallen to the ground or onto a lower level, the individual should have the necessary resources to recover from the fall. The completed fall domain has established rehabilitation strategies which include the training of an older person to get up from the floor<sup>45</sup>. This mode of training instils some degree of confidence in their ability to deal with the "unexpected event" scenario in older adults. The items "Finding a way to get up if they fell" from the PAMF<sup>5</sup> or "Ability to find a way to get up if they fall" from the PPMFR<sup>21</sup> may be appropriately used to gain a better understanding of the perceived self-efficacy in individuals within this domain.

As there is an absence of empirical evidence in the measurement properties of existing measures to determine the perceived self-efficacy in older people within different domains of falls efficacy (other than balance confidence), clinicians should interpret the results with caution. Researchers and clinicians aiming to develop appropriate measures should conduct a systematic literature review for all existing instruments for the specific constructs<sup>22</sup>. Moving forward with our practice, we reiterate the calls of Jørstad et al.<sup>18</sup>, Moore and Ellis<sup>19</sup> and Hughes et al.<sup>8</sup> that researchers and clinicians need to be mindful of the construct of interest, adequately stating them when using the different measurement instruments, so as to avoid research waste and to mitigate the risk of misinterpretation by fellow colleagues<sup>46</sup>.

### **Person-centred care**

Applying a new perspective of falls efficacy is important in person-centred care practice (PCC). PCC highlights the importance of knowing the individual as a person and is a key component in engaging the person as an active partner for their care<sup>47</sup>. Clinicians working with older adults should aim to preserve their identity and independence when managing different issues surrounding falls<sup>48</sup>. A comprehensive approach should not only address ways of mitigating the risks of falling, but to advocate a spectrum of strategies, including improving reactive balance recovery abilities, learning skills to be a 'safe faller', and knowing the different ways of getting help after a fall. This would allow the older person to lead a fulfilling and flourishing life<sup>28</sup>. Clinicians have acknowledged the importance of working with the

older person through a shared decision-making process: the foundation of patient-centred care, and in this case, older person-centred care<sup>49</sup>. To have an effective, shared decision-making session, healthcare providers need to partner with their patients and support their patients in making health care choices consistent with their values and priorities.

The use of appropriate measures to understand specific constructs has been proposed as valuable tools to build mutual understanding between health care professionals and their patients<sup>50</sup>. Improper use of measures, e.g. for other purposes that they are validated for, can risk clinicians making inadequate clinical decisions, leading to patients not receiving the care that they need. Given that person-centred care stems from the proper understanding of patient's needs, then accurate information of their perceived self-efficacy is required to inform clinicians<sup>51,52</sup>.

### Moving forward

Working with older adults to deal with a complex phenomenon such as a fall requires a clear and comprehensive approach<sup>53</sup>. A broader perspective of falls efficacy should improve agency in older adults to remain independent and be confident of overcoming the consequences of falling. Falls management is not just about avoiding the risks of falling<sup>28</sup> but should include complementary strategies to deal with the falling process, as well as to recover from a fall. The notion of falls efficacy is a multidimensional construct that would encourage clinicians and researchers to work on specific issues of falls and falling.

Presently, there are well-established measurement instruments available to measure the self-efficacy of performing activities without losing balance or falling (pre-fall domain). Current measures of falls efficacy might suitably measure the construct of balance confidence. There is a need to further investigate the suitability of existing measures for the other domains of falls efficacy. If not, then new measures should be purposefully created. Further research applying appropriate assessments, interventions, and evaluation methods, e.g. COSMIN<sup>54</sup> guide would be needed to have a fuller understanding about the different domains of falls efficacy in various settings. Falls efficacy may not have a tautological relationship with balance confidence. Falls efficacy should be viewed as the perceived self-efficacy to manage a fall, addressing four domains from pre-fall to post-fall. Lach<sup>55</sup> had pointed out the need to consider both efficacy expectations and outcome expectancy in her article "Self-efficacy and fear of falling: in search of complete theory". It may be plausible that the new perspective of falls efficacy would open the possibility to gain a better understanding of the effect of falling, as well as the effect of falling on the behaviour and health of older adults. An extended understanding of falls efficacy might possibly reshape how clinicians and researchers approach their practice to improve self-efficacy in older adults on falls.

### Conclusion

Applying a new perspective towards falls efficacy may potentially drive a more meaningful direction toward falls management. The traditional understanding of falls efficacy has been purposeful in helping older adults maintain their independence. However, it may not be enough in empowering an older person to deal with an actual fall, e.g. improved agency in older adults to arrest a fall upon losing balance, fall safely or recover post-fall. An extended perspective of falls efficacy gives greater attention to the self-efficaciousness of handling a fall if the unfortunate event occurs. There is a need for clinicians and researchers to be explicit about the targeted construct of interest and select suitable self-reported measurement instruments to evaluate the efficacy of rehabilitation approaches for the intended construct.

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